REMEDIAL ACTION PLAN

Former Pechiney Cast Plate, Inc., Facility

3200 Fruitland Avenue, Vernon, California

Prepared for:

Pechiney Cast Plate, Inc.

Prepared by:

AMEC Geomatrix, Inc.
510 Superior Avenue, Suite 200
Newport Beach, California 92663
(949) 642-0245

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Project No. 10627.003.0

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This report was prepared by the staff of AMEC Geomatrix, Inc., under the supervision of the Engineer and/or Geologist whose signatures appear hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.

Linda Conlan, PG
Senior Geologist

Calvin H. Hardcastle, PE
Principal Engineer

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ACRONYMS AND ABBREVIATIONS

Alcoa	Aluminum Company of America
AMEC	AMEC Geomatrix, Inc.
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
bgs	below ground surface
Century	Century Aluminum Company
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CHHSL	California Human Health Screening Level
COC	chemical of concern
cfu/gm-dw	bacteria colony forming units per gram of soil dry weight
COPC	Chemical of Potential Concern
Cr (VI)	Hexavalent Chromium
DAF20	Dilution Attenuation Factor of 20
DCA	Dichloroethane
DTSC	Department of Toxic Substances Control
ESA	Environmental Site Assessment
FS	Feasibility Study
Geomatrix	Geomatrix Consultants, Inc., and AMEC Geomatrix, Inc.
H&EC	City of Vernon Health & Environmental Control
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
HI	Hazard Index
h.p.	horse power
HQ	Hazard Quotient
IDW	Investigation Derived Waste
ISR	In situ respiration

ISS	In situ stabilization
MCL	Maximum Containment Level
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MNA	Monitored natural attenuation
NCP	National Contingency Plan
O&M	Operation and Maintenance
OEC	Other Environmental Condition
OEHHA	Office of Environmental Health Hazard Assessment
PCB	Polychlorinated Biphenyl
PCBNP	Polychlorinated Biphenyl Notification Plan
PCE	Tetrachloroethene
Pechiney	Pechiney Cast Plate, Inc.
PID	Photoionization Detector
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goal
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RAP	Remedial Action Plan
ROI	Radius of Influence
RBSL	Risk-Based Screening Level
REC	Recognized Environmental Condition
RI/FS	Remedial Investigation/Feasibility Study
RWQCB	California Regional Water Quality Control Board, Los Angeles Region
SCAQMD	South Coast Air Quality Management District
SCM	Site Conceptual Model
Site	Former Pechiney Cast Plate, Inc. Facility, 3200 Fruitland Avenue, Vernon, California

SSL	Soil Screening Level
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
SWPPP	Storm Water Pollution Prevention Plan
TCE	Trichloroethene
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
U.S. EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
vGAC	vapor-phase Granular Activated Carbon
Vernon Facility	Former Pechiney Cast Plate, Inc. Facility, 3200 Fruitland Avenue, Vernon, California
VOC	Volatile Organic Compound

REMEDIAL ACTION PLAN
Former Pechiney Cast Plate, Inc. Facility
3200 Fruitland Avenue
Vernon, California

EXECUTIVE SUMMARY

AMEC Geomatrix, Inc. (AMEC; formerly Geomatrix Consultants, Inc. [Geomatrix]), has prepared this Remedial Action Plan (RAP) on behalf of Pechiney Cast Plate, Inc. (Pechiney) for the former Pechiney facility (Vernon Facility or Site) located at 3200 Fruitland Avenue in Vernon, California (Figure 1).

Introduction and Purpose

Based on the information provided in the Feasibility Study (FS) (AMEC, 2009b), this RAP was prepared in accordance with Department of Toxic Substances Control (DTSC) guidance and policy for RAP development (DTSC policy #EO-95-007-PP), and pursuant to Health and Safety Code section 25356.1. This RAP provides the details and procedures for remediating polychlorinated biphenyl (PCB)-impacted concrete during demolition of below-grade features, and remediating impacted soil and soil vapor during and following below-grade demolition. DTSC has the final approval authority for the implementation of this RAP. However, pursuant to the Code of Federal Regulations (CFR), Title 40, Subchapter R, Toxic Substances Control Act (TSCA), Part 761 (40 CFR 761), the United States Environmental Protection Agency (U.S. EPA) has oversight jurisdiction for PCB-related matters. Implementation of the RAP will be subject to DTSC approval of the RAP and issuance of an Order directing Pechiney to implement the RAP, as well as U.S EPA approval of the PCB Notification Plan (AMEC, 2009a) submitted to U.S. EPA on July 13, 2009.

Site History

The Site is comprised of approximately 26.9 acres and was formerly occupied by approximately 600,000 square feet of building area. Manufacturing operations at the Site began in approximately 1937 and included production of high-precision cast aluminum plates. As part of their manufacturing operations, Aluminum Company of America (Alcoa; original Site owner) used fuels and Stoddard solvent, both of which were stored in underground storage tanks (USTs). Stoddard solvent was used during the aluminum manufacturing process. Alcoa also operated processes that required lubricating oils and generated hazardous waste that was stored at various locations throughout the Site.

In 1998, Alcoa sold the western portion of the facility (3200 Fruitland Avenue) to Century Aluminum Company (Century). In 1999, Pechiney purchased the Site, and subsequently closed the Vernon facility in late 2005.

Previous Investigations, Chemicals of Concern, and Removal Actions

Previous remedial investigations were conducted at the Site for soil, soil vapor, groundwater, and building materials. During these investigations, Site chemicals of concern (COCs) were identified as described below.

- Soil impacted with petroleum hydrocarbons (including Stoddard solvent compounds), metals, PCBs, and volatile organic compounds (VOCs).
- Soil vapor impacted with Stoddard solvent compounds and VOCs.
- Groundwater (at a depth of 150 feet) impacted with chlorinated VOCs.
- Building concrete slabs impacted with PCBs.

Alcoa investigated subsurface conditions and conducted limited remediation in both the eastern and western portions of its facility at that time as part of their efforts to seek closure of its City of Vernon Health & Environmental Control (H&EC) hazardous materials permit. Alcoa's activities are described in Section 3.0 of this document.

As part of the aboveground demolition work completed in November 2006 by Pechiney, the above-ground features, including the former manufacturing facilities, were demolished leaving the concrete floor slab in place; and the debris was transported off-site for disposal or recycling.

Summary of Site Risks

The preferred remedial alternatives discussed in this RAP focus on mitigating principal risk threats posed by remaining PCB-impacted concrete, surface and shallow COC-impacted soil, deeper soil impacted by Stoddard solvent, and deeper soil impacted by VOCs. Implementation of the RAP will reduce the potential for risks to human health due to exposure to shallow soil containing COCs, and reduce the potential impacts to groundwater from exposure to deeper COC-impacted soil.

The RAP also provides materials management practices that will be implemented during below-grade demolition, and excavation and removal of non-COC-impacted concrete and soil at the Site.

Remedy Evaluation Process

The Health and Safety Code section 25356.1(d) requires that remedy evaluations be based on requirements contained in the National Contingency Plan (NCP), 40 CFR 300.430. The NCP identifies evaluation criteria (also known as balancing or evaluation criteria) to be used in the development and scoping of remedial alternatives to provide a basis for comparison using additional, more detailed criteria, referred to as evaluation criteria. The criteria include those developed by the U.S. EPA in NCP 40 CFR 300.430(a)(1)(iii) and as modified by the State of California. All nine balancing criteria (including Threshold Criteria, Primary Balancing Criteria, and Modifying Criteria) are evaluated in the FS and described in this RAP.

The following technologies were previously evaluated in the FS and retained for additional, detailed evaluation.

- No action;
- Excavation and removal followed by landfill disposal for surface and shallow COC-impacted soil and deep VOC-impacted soil;
- In situ stabilization of shallow metals-impacted soil, Stoddard solvent-impacted soil, and PCB-impacted soil;
- Soil vapor extraction (SVE) for shallow and deep VOC-impacted soil;
- SVE and bioventing for shallow and deep Stoddard solvent-impacted soil; and
- Demolition and off-site disposal of PCB-impacted concrete.

These technologies were combined in the FS into potential alternatives considered for mitigating COC-impacted areas at the Site, which are discussed further in Section 6.2 of this document.

Alternatives Considered

The alternatives evaluated in the FS are presented below.

Alternative 1

Alternative 1 defined as “No Action” is included for evaluation pursuant to NCP 40 CFR 300.430(e)(6) and retained for comparison purposes. In this alternative, no below-grade demolition or soil remediation would be performed. Based on the findings described in the FS, a “No Action” alternative is not acceptable for this Site.

Alternative 2

Alternative 2 consists of excavation and off-site disposal of both shallow and deep COC-impacted soil (metals, PCBs, Stoddard solvent, and VOCs) to depths of approximately 8 feet below ground surface (bgs) for metals, 12 feet bgs for PCBs, and 50 feet bgs for VOCs and Stoddard solvent, respectively. Excavation will require installation of shoring for sidewall stability and safety during soil removal. This alternative also consists of demolition and landfill disposal of PCB-impacted concrete slabs containing PCB concentrations greater than 5.3 milligrams per kilogram (mg/kg).

Alternative 3

Alternative 3 consists of excavation and off-site disposal of shallow COC-impacted soil (PCBs and metals) to depths of approximately 12 feet bgs. Shallow (up to 50 feet bgs) and deep (up to 90 feet bgs) VOC-impacted soil would be mitigated using SVE. Shallow (up to 50 feet bgs) Stoddard solvent-impacted soil would be mitigated using sequential treatment consisting initially of SVE, followed by longer term bioventing. This alternative also consists of demolition and landfill disposal of PCB-impacted concrete slabs containing PCB concentrations greater than 5.3 mg/kg. Non-PCB-impacted concrete (less than 5.3 mg/kg) would be crushed and reused on-site as unrestricted fill material.

Alternative 4

Alternative 4 consists of in situ stabilization of shallow PCB- and metals-impacted soil and deep Stoddard solvent-impacted soil, using a cement-based additive to depths of approximately 12 feet bgs for PCB- and metals-impacted soil and approximately 50 feet for Stoddard solvent-impacted soil. Shallow (up to 50 feet bgs) and deep (up to 90 feet bgs) VOC-impacted soil would be mitigated using SVE. This alternative also consists of demolition and landfill disposal of PCB-impacted concrete slabs containing PCB concentrations greater than 5.3 mg/kg.

Preferred Remedial Alternative

Alternative 3 was selected as the preferred remedial alternative because Alternative 3 meets the balancing criteria discussed above, as required by Health and Safety Code section 25356.1(d) and the NCP, and will not require extensive soil excavation and off-site disposal, and COC-impacted soil will be mitigated to reduce COC concentrations to levels below risk-based remediation goals. Alternative 3 is preferred over Alternative 2 because Alternative 3 provides a reduction of toxicity, mobility, and volume of COC-impacted soil by treatment compared to landfill disposal. Alternative 3 is preferred over Alternative 4 because Alternative 3 will reduce the toxicity, mobility, and volume of COC-impacted soil to a greater extent than Alternative 4. Alternative 3 consists of limited soil excavation and disposal and SVE and bioventing in a balanced mitigation strategy that is cost-effective, minimally invasive, less disruptive to the local community, and protective of human health and the environment.

Community Involvement

The objective of the community involvement program is to inform the community of the progress of demolition and remediation work and to effectively respond to health, environment, and safety concerns and questions. The community involvement program will be consistent with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as implemented by the NCP 40 CFR 300.430(c)(1). The purpose of the community involvement plan as stated by the NCP 40 CFR 300.430(c)(2)(ii)(A), is to "ensure the public appropriate opportunities for involvement in a wide variety of Site-related decisions, including Site analysis and characterization, alternatives analysis, and selection of remedy; and to determine, based on community interviews, appropriate activities to ensure such public involvement."

Objectives of the community involvement program include:

- soliciting input from the community on concerns regarding the remedial activities;
- establishing effective communication between the community, Pechiney, and DTSC;
- informing the community about progress of the remedial activities; and
- providing opportunities for the community to participate and comment on the proposed remedial activities.

Prior to implementation of the RAP, Pechiney will expand its outreach and distribute an information fact sheet to businesses and residents surrounding the Site and to other interested stakeholders. This fact sheet will include information about the Site, remedial activities, and project contacts. Additionally, a local information repository will be established to make documents and other information available to the public and a Site mailing list will be developed.

This RAP will be made available to the public for a comment period of at least 30 days. Pechiney will work with DTSC to respond to any comments and to provide a timely opportunity for the public to access documents.

Depending on the level of community response and level of interest, Pechiney will hold a community meeting to discuss the components of the RAP, the Site's history, and proposed remedial work. The meeting may also provide the opportunity for the public to submit comments regarding the RAP. Pechiney will work with the community to develop a meeting format that suits the community's needs.

The DTSC will oversee all community involvement activities throughout the RAP implementation and to ensure that they are conducted in compliance with State and Federal regulations.

REMEDIAL ACTION PLAN
Former Pechiney Cast Plate, Inc. Facility
3200 Fruitland Avenue
Vernon, California

1.0 REMEDIAL ACTION PLAN

AMEC Geomatrix, Inc. (AMEC; formerly Geomatrix Consultants, Inc. [Geomatrix]), has prepared this Remedial Action Plan (RAP) on behalf of Pechiney Cast Plate, Inc. (Pechiney) for the former Pechiney facility (Vernon Facility or Site) located at 3200 Fruitland Avenue in Vernon, California (Figure 1).

A Feasibility Study (FS) (AMEC, 2009b) was previously prepared on behalf of Pechiney, to evaluate potential remedial technologies and provide recommendations for the proposed, preferred remedy for impacted soil and soil vapor within the vadose zone, and impacted concrete at the Site. The FS was submitted and reviewed by the Department of Toxic Substances Control (DTSC). The FS was completed using the Code of Federal Regulations (CFR), Title 40, Section 300, also known as the National Contingency Plan (NCP), and appropriate guidance documents developed by the United States Environmental Protection Agency (U.S. EPA), including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) guidance (U.S. EPA, 1988).

This RAP was prepared in accordance with DTSC guidance and policy for RAP development (DTSC policy #EO-95-007-PP), and pursuant to California Health and Safety Code Section 25356.1. This RAP provides the details and procedures for remediating polychlorinated biphenyl (PCB)-impacted concrete during demolition of below-grade features, and remediating impacted soil and soil vapor during and following below-grade demolition. DTSC has approval authority for the implementation of this RAP. Pursuant to 40 CFR, Subchapter R, Toxic Substances Control Act (TSCA), Part 761 (40 CFR 761), the U.S. EPA has oversight jurisdiction for PCB-related matters. Implementation of the RAP will be subject to DTSC approval of the RAP and issuance of an Order directing Pechiney to implement the RAP, as well as U.S. EPA approval of the PCB Notification Plan (AMEC, 2009a) submitted to U.S. EPA on July 13, 2009.

1.1 INTRODUCTION

The Site is comprised of approximately 26.9 acres (including Assessor Parcel Numbers 6301-008-010, -011, -012, -013, which was divided into Parcels 6, 7, and 8) and was formerly occupied by approximately 600,000 square feet of building area. The Site was used to manufacture high-precision cast aluminum plates. As part of the demolition work completed in November 2006, the above-ground features, including the former manufacturing facilities, were demolished; leaving the concrete floor slabs in place, and the debris was transported off-site for disposal or recycling.

Remediation of remaining impacted concrete and soil will be conducted in conjunction with demolition of remaining surface slabs and below-grade features. This work will include removal of man-made structures, building slabs, pavements, footings, foundations, pits, and sumps located within the footprint of the former buildings as described in the Below Grade Demolition Plan (Geomatrix, 2006b) previously approved by the City of Vernon.

1.2 REPORT STRUCTURE

This RAP includes the following information (listed by relevant section).

- Section 1.0 provides an introduction to the RAP and defines the report structure.
- Section 2.0 provides Site background information.
- Section 3.0 summarizes the results of the remedial investigation.
- Section 4.0 describes the removal actions completed to date.
- Section 5.0 presents a summary of Site risks.
- Section 6.0 provides a summary evaluation of the remedial alternatives considered in the FS.
- Section 7.0 discusses implementation of the preferred remedial alternative, and provides additional details related to soil management of any new, undiscovered releases that might be encountered during below-grade demolition or RAP implementation.
- Section 8.0 discusses the public participation and community involvement process.
- Section 9.0 provides report references.

2.0 SITE BACKGROUND

Aluminum Company of America's (Alcoa's) manufacturing operations reportedly began at the Site in approximately 1937 and included production of high-precision cast aluminum plates. As part of their manufacturing operations, Alcoa (original Site owner) used fuels and Stoddard solvent, both of which were stored in underground storage tanks (USTs). Alcoa used Stoddard solvent during the aluminum manufacturing process. Alcoa also operated processes that required lubricating oils and generated hazardous waste that was stored at various locations throughout the Site. The historical site layout is shown on Figure 2.

Previous investigations were conducted at the Site for soil, groundwater, soil vapor, and building materials. During these investigations, soil impacted with petroleum hydrocarbons (including Stoddard solvent), metals, PCBs, and volatile organic compounds (VOCs) were identified. The presence of chlorinated VOCs also was identified in groundwater at a depth of approximately 150 feet below ground surface (bgs) within the southwestern portion of Parcel 7, west of Building 112A and within the northern portion of the Buildings 106/108 on Parcel 8.

In approximately 1997, Alcoa sold the eastern half of its facility, which subsequently was razed, subdivided, and redeveloped for industrial and commercial uses. Alcoa investigated subsurface conditions and conducted limited remediation in both the eastern and western portions of its facility at that time as part of its efforts to close its City of Vernon Health and Environmental Control) (H&EC) hazardous materials permit. These activities are described in Section 3. In December 1998, Alcoa sold the western portion of the facility (3200 Fruitland Avenue) to Century Aluminum Company (Century). In 1999, Pechiney purchased the Site, and subsequently closed the Vernon facility in January 2006.

This preferred remedial alternative discussed in this RAP addresses principal risk threats posed by chemicals of concern (COCs) present at the Site. These principal risks include PCB-impacted concrete, surface and shallow COC-impacted soil (at depth less than or equal to 15 feet), deep Stoddard solvent-impacted soil (at depths greater than 15 feet), and deep VOC-impacted soil at the Site. RAP implementation will reduce the potential for risks to human health due to exposure to shallow soil containing COCs, and remediation of deeper COC-impacted soil that may potentially affect groundwater quality.

The RAP also covers the materials management practices that will be implemented during below-grade demolition, and excavation and removal of non-COC-impacted concrete and soil at the Site.

3.0 SUMMARY OF REMEDIAL INVESTIGATIONS

Previous remedial investigations performed by prior Site owners and Pechiney are summarized below.

3.1 ALCOA'S PREVIOUS INVESTIGATIONS

Previous investigations were conducted by consultants to Alcoa and were related to closure of Alcoa's facilities and operations on and east of the Site (including Alcoa's efforts to seek closure of its City of Vernon H&EC hazardous materials permit). A summary of previous Alcoa investigations is presented in the Phase I Environmental Site Assessment (ESA) (Geomatrix, 2005a) and the FS (AMEC, 2009b). Previous investigations included the collection and analysis of soil, groundwater, soil vapor, and building materials samples and were conducted under the oversight of the City of Vernon H&EC. During these investigations, soil impacted with petroleum hydrocarbons (including Stoddard solvent), metals, PCBs, and VOCs were identified. The presence of VOCs (trichloroethene [TCE]; 1,2-dichloroethane [1,2-DCA]; and chloroform) also was identified in groundwater at a depth of approximately 150 feet bgs within the southwestern portion of Parcel 7, west of Building 112A. In this area of the Site, these three VOCs were not detected in soil.

Nine groundwater wells were constructed at the Site between 1990 and 1991 by Alcoa under the oversight of the City of Vernon H&EC. No groundwater monitoring wells were constructed in the northwest portion of the Site. All but three of the monitoring wells (AOW-6, AOW-8, and AOW-9) were destroyed by Alcoa under the oversight of the City of Vernon H&EC. The three remaining groundwater monitoring wells are located near former Building 112A in the southern portion of Parcel 7. Groundwater quality data collected from monitoring wells sampled and analyzed between 1990 and 1997 indicated the presence of TCE; 1,2-DCA; and chloroform in groundwater (upper portion of the Exposition aquifer) beneath the southwest portion of the Site with historical concentrations of 160 micrograms per liter (µg/L), 370 µg/L, and 105 µg/L, respectively, of TCE, 1,2-DCA and chloroform (Enviro-Wise, 1998). The highest concentrations of these VOCs were detected in groundwater in the vicinity of the former Stoddard solvent USTs located outside of Building 112A in Parcel 7.

Previous evaluations conducted by Alcoa suggested the source of VOCs in groundwater in the southwest portion of Parcel 7 was from an upgradient, off-site source. At the time, the City of Vernon H&EC concurred with this evaluation, but because the closure of the groundwater wells required the California Regional Water Quality Control Board, Los Angeles Region (RWQCB) concurrence and approval, Alcoa submitted its recommendations for Site closure to the RWQCB on February 18, 1999 (Alcoa, 1999). Because groundwater at these wells was impacted with chlorinated VOCs and because the wells were located in an area associated with the former Stoddard solvent USTs, the RWQCB required that Alcoa perform additional assessment of groundwater for methyl tertiary-butyl ether and fuel oxygenates (RWQCB, 2002). Alcoa conducted additional monitoring of the remaining three groundwater wells in 2005 and 2006 and submitted the monitoring data to the RWQCB. Based on the monitoring results, the concentrations of chlorinated VOCs decreased relative to the concentrations reported earlier (1990 - 1997). The compounds TCE, 1,2-DCA, and chloroform were detected at concentrations up to 28 µg/L, 6.1 µg/L, and 8.6 µg/L, respectively, during the most recent sampling event conducted in 2006. These compounds were not detected in groundwater samples collected from well AOW-6.

In a March 28, 2008 letter, the RWQCB directed Alcoa to 1) provide a work plan to characterize residual soil contamination in the former Stoddard solvent UST area and submit a site-specific health and safety plan by April 25, 2008; 2) sample the groundwater wells in the former UST area (AOW-7, AOW-8 and AOW-9) or install and sample replacement groundwater wells if AOW-7, AOW-8 and AOW-9 can not be used or located; 3) submit additional historical reports and data related to the Stoddard solvent releases; 4) analyze soil and groundwater for a specific suite of petroleum hydrocarbon compounds and VOCs; 5) log and sample soil at 5-foot intervals, at lithologic changes, or observed impacted soil; and 6) initiate electronic submittals through the State database (RWQCB, 2008a).

On December 18, 2008, the RWQCB (2008b) determined that the impacts associated with chlorinated solvents in soil and groundwater at the Site, including the area of the former Stoddard solvent USTs should be addressed by Alcoa under the jurisdiction of the DTSC. Although the Stoddard solvent impacts remain the responsibility of Alcoa as directed in a September 2, 1999 closure letter from the City of Vernon H&EC and the December 18, 2008 RWQCB correspondence, Alcoa has not taken responsibility for these impacts. Therefore, the Stoddard solvent-impacts and the associated residual petroleum hydrocarbon-impacts have been included in the FS and this RAP.

3.2 GEOMATRIX INVESTIGATIONS

In June 2005, Geomatrix conducted a Phase I ESA (Geomatrix, 2005a) at the Vernon Facility to identify Recognized Environmental Conditions (RECs) as defined by ASTM International, Inc. E1527-00 for Phase I ESAs. In addition to identifying RECs, Geomatrix identified historical RECs and potential other environmental conditions (OECs) at the Site. The Phase I ESA report was submitted to the City of Vernon on September 1, 2005, and the City of Vernon H&EC concurred with the findings in their letter dated September 26, 2005. The findings of the Phase I ESA indicated the need for additional subsurface investigation at the Site. Geomatrix submitted a Phase II ESA work plan (2005b) to the City of Vernon H&EC on September 2, 2005, and the work plan was approved by the City of Vernon H&EC on September 26, 2005 (City of Vernon, 2005). A summary of the Geomatrix investigations is described in the following subsections.

3.2.1 Phase II Investigation

Based on the findings of the previous investigations and the manufacturing operations in each building and/or area, these chemicals of potential concern (COPCs) were identified:

- total petroleum hydrocarbons (TPH), including Stoddard solvent compounds;
- PCBs;

- VOCs;
- metals, including hexavalent chromium [Cr (VI)]; and
- semi-volatile organic compounds (SVOCs).

Based on Alcoa's historical groundwater monitoring results, TCE; 1,2-DCA; and chloroform were identified as groundwater COPCs at the Site.

A Phase II investigation was conducted as the initial remedial investigation at the Site between November and December 2005. The investigation was conducted to evaluate whether the RECs or OECs identified in the Phase I ESA had resulted in releases to the subsurface soil and/or groundwater at the Site. The initial remedial investigation included the collection and analysis of soil vapor and soil samples for a number of constituents. The findings of the investigation were submitted to the City of Vernon H&EC in a report dated March 9, 2006 (Geomatrix 2006a).

Soil and soil vapor data collected during the Phase II investigation were evaluated using a stepped screening process for the potential of groundwater impacts and the potential for risks to human health due to exposure to shallow soil containing COPCs. The initial step of the screening process was to evaluate potential VOC impacts and the need to collect additional soil samples. Based on the soil vapor results obtained in Building 106, the collection and analysis of additional soil samples were required to further assess potential VOC impacts.

The second step of the screening evaluation included a comparison of the Phase II soil sample results to the following regulatory screening levels.

- Los Angeles RWQCB Interim Site Assessment and Cleanup Guidebook (May 1996, and updated March 2004) groundwater protection screening levels for carbon range-specific petroleum hydrocarbons and aromatic hydrocarbons (benzene, toluene, ethylbenzene, and total xylenes [BTEX] compounds) in soil. The selected screening levels were obtained from Table 4-1 of the above-referenced RWQCB guidance assuming a sand lithology and a depth to groundwater of 150 feet.

- U.S. EPA Region IX Preliminary Remediation Goals (PRGs) for industrial sites and concentrations for VOCs, SVOCs, PCBs, and metals in soil (U.S. EPA, 2004).

- U.S. EPA Region IX soil screening levels (SSLs) for the protection of groundwater using a default dilution attenuation factor of 20 (DAF20) for VOCs, SVOCs, and metals, where available (U.S. EPA, 2004).

- California Background Concentrations of Trace and Major Elements in California Soil (Bradford, et. al., 1996).

- California Code of Regulations, Title 22, Total Threshold Limit Concentration and Soluble Threshold Limit Concentration for metals and PCBs in building materials (waste characterization).

Based on the data collected during the Phase II investigation and the above screening evaluation process, certain areas at the Site were identified as impacted by one or more COPCs at concentrations greater than the screening criteria. Although the screening criteria are not intended to be remediation goals, they were used to evaluate the potential need for further action (such as additional investigation, analysis, or potential remediation). Remediation goals may differ from screening levels based on site-specific considerations (e.g., power plant construction, future land use, potential exposure pathways, etc.), regulatory requirements, evaluation of risk, or other relevant factors as set forth in NCP 40 CFR 300.

The following areas of the Site had COPCs that exceeded one or more of the screening criteria (the boring locations discussed below are shown on Figure 3). For each of these areas, the results of the Phase II investigation indicated that additional investigation was necessary and the City H&EC approved these subsequent investigatory actions on March 20, 2006.

- Building 104 – PCBs were detected in the concrete slab and soil to a depth of 3 feet bgs adjacent to the location of a saw (borings 41, 73, and 74). Additional soil borings were required in the vicinity of the saw to assess the source and extent of PCBs detected in concrete and the underlying soil.

- Building 104 – PCBs were detected in soil to a depth of approximately 71.5 feet bgs in the vicinity of a vertical pit and a former vertical pit (boring 40). Additional soil borings were required near both vertical pits to assess the source and extent of PCBs detected in soil.

- Buildings 106 and 108 – TCE was detected in soil beneath the northern portion of the buildings to a depth of approximately 48 feet bgs (boring 14), and TCE was detected in soil vapor. Additional investigation of the lateral extent of TCE in soil and its potential impacts to groundwater was required in this area.

- Building 112 (former etch station) and near storm water outfall #6 – one or more metals were detected in soil to a depth of 6 feet bgs (boring 113). Additional investigation of the lateral extent of metals in shallow soil was required in these areas.

- Former Substation #8 – PCBs were detected in the soil and gravel drainage area of the former substation to a depth of 2.2 feet bgs (boring 39), but PCBs were not detected in the soil boring adjacent to the drainage area. Additional investigation of the depth of the soil/gravel drainage area and the concentrations of PCBs in these materials was required.

Although concentrations of COPCs in other areas of the Site did not exceed screening criteria, additional remedial investigations were required by the City of Vernon H&EC at three locations to obtain a better understanding of the source of the deeper soil impacts and to confirm that soil concentrations were not increasing with depth. These three locations are listed below.

- Building 106 – Stoddard solvent-range petroleum hydrocarbons were detected in one soil sample at a depth of approximately 47 feet bgs (boring 13). Because these hydrocarbon compounds were not detected in shallow soil at this boring or in soil vapor in the vicinity of the boring, further investigation of the source of these compounds at 47 feet bgs in soil was required.

- Building 112 – TPH concentrations in soil increased with depth at a boring drilled to a depth of 9.6 feet adjacent to a former sump (boring 30). Although the hydrocarbon concentrations were below the screening levels, their vertical extent in soil adjacent to the sump had not been characterized and required further evaluation.

- Cooling Tower area – Cr (VI) and PCBs (Aroclor-1248) were detected in one soil sample from boring 46 at a depth of 21.1 feet bgs (the bottom of the boring). PCBs and Cr (VI) were not detected in shallow soil samples collected from boring 46, and therefore, further investigation of the source of PCBs and Cr (VI) detected at 21.1 feet bgs in soil was required.

3.2.2 Supplemental Phase II Investigation

The Phase II remedial investigation results indicated a need to 1) assess the extent of impacted soil exceeding the screening criteria, 2) assess potential impacts to groundwater, and 3) further understand the subsurface conditions at the Site for each of the areas identified in Section 3.2.1. Therefore, a Supplemental Phase II investigation was required in specific areas of the Site. On March 9, 2006, Geomatrix submitted a proposed plan to the City of Vernon H&EC to further characterize the extent and potential significance of COPCs exceeding screening criteria in soil at the Site and the potential impacts to groundwater related to TCE detections in soil and soil vapor in Buildings 106 and 108. On March 20, 2006 the City of Vernon H&EC approved the Supplemental Phase II investigation plan, and the investigation was conducted between March 28, 2006 and April 24, 2006.

Based on the findings of the initial Supplemental Phase II investigation, a follow-up investigation was required to further characterize the extent of VOCs detected in soil, soil vapor, and groundwater in the north portion of the Site. In a letter to the City of Vernon H&EC dated May 9, 2006, Geomatrix identified additional sampling points in Buildings 106, 108, and 112. Under approval and direction from the City Vernon H&EC, the additional investigation work began on May 11, 2006 and was completed on May 24, 2006. The findings of the Supplemental Phase II investigation were submitted to the City of Vernon H&EC in a report dated December 19, 2006 (Geomatrix, 2006c).

As a continuation of the remedial investigation work at the Site, Pechiney was directed by DTSC to conduct an off-site soil vapor survey at the intersection of Fruitland and Boyle Avenues near the northwest corner of the Site in July of 2009. DTSC required the work to be conducted to assess the off-site extent of VOC concentrations in shallow soil vapor in the vicinity of former Building 106. In addition, and in order to meet DTSC's requirements for evaluating human health risk related to vapor intrusion, a shallow soil vapor survey was conducted within the footprint of Building 112A and to the west of the building in the vicinity of the former Stoddard solvent UST area. This work was necessary because of the lack of soil vapor data which was required to complete the human health risk assessment (HHRA) evaluation for potential indoor air exposure to Stoddard solvent compounds. The findings of this work are provided in the FS (AMEC, 2009b).

3.2.3 Geomatrix Concrete Characterization

In addition to the concrete testing conducted during the Phase II investigation, coring and testing of the concrete slabs and concrete transformer pads were performed during and after above-grade demolition work to further characterize PCB-impacted concrete. PCBs were detected in concrete samples at concentrations greater than 1 mg/kg in portions of Buildings 104, 106, 108, 110, 112, and 112A. A summary of PCB concentrations detected in the concrete samples is shown on Figure 4.

In July 2009, AMEC submitted a Polychlorinated Biphenyls Notification Plan (PCBNP; AMEC, 2009a) to U.S. EPA for approval of a risk-based application for on-Site remediation of PCB releases and disposal of PCB-remediation waste (soil and concrete). The PCBNP was prepared in compliance with TSCA 40 CFR 761, including applicable amendments (June 29, 1998, 40 CFR Parts 750 and 761, Disposal of Polychlorinated Biphenyls, Final Rule). U.S. EPA's approval of the risk-based application is pending.

3.3 AREAS OF IMPACT

Although the screening criteria described in Section 3.2.1 are not intended to be remediation goals, one or more COPCs were detected in soil and concrete at concentrations above these screening criteria during the Phase II and Supplemental Phase II investigations. The areas identified as impacted by one or more COPCs with concentrations exceeding these initial screening criteria are described below. With the exception of storm water outfall #6, these areas were not previously identified by Alcoa as being impacted by VOCs or PCBs.

- Northern Portion of Buildings 106, 108, and 112 – TCE was detected in soil vapor, soil, and groundwater in the northwestern portion of the Site. Data collected to date indicate the likely presence of a source of VOCs in soil and groundwater in the northwest corner of Building 106. TCE and tetrachloroethene (PCE) concentrations detected in soil exceed the U.S. EPA Region IX SSL for the protection of groundwater (using a DAF20) in this area. TCE was detected in groundwater samples collected from a depth of 150 feet bgs at concentrations ranging from 72 to 420 µg/L. In addition, PCBs were detected in the concrete slab in portions of these buildings.

The investigation of off-site soil vapor concentrations to the northwest of Building 106, at the intersection of Fruitland and Boyle Avenues, identified TCE and PCE detections in shallow soil vapor samples at 5 and 15 feet (sample locations 161 through 164). TCE soil vapor concentrations decreased to the north and west of the Site, while the PCE soil vapor concentrations increased. For comparison, the molar ratios of PCE to TCE (0.10 and 0.42) were an order of magnitude higher at three of the off-site soil vapor sample locations. The molar ratios calculated for the on site samples from the suspected source area ranged between 0.01 and 0.087. The observed higher PCE concentrations and PCE to TCE molar ratios suggest the probability of an off-site source of PCE.

- Southern Portion of Building 106 – aromatic VOCs, primarily benzene, were detected in soil and groundwater in the southern portion of the building at borings 125 and 135. Benzene was detected in groundwater samples at concentrations ranging from 2.8 to 3.3 µg/L. PCBs also were detected in the concrete slab at the southwest corner of this building.

- Existing and Former Vertical Pits in Building 104 – PCBs were detected in soil to a depth of 31 feet bgs at boring 98 and at depths between 10 and 71.5 feet bgs at borings 40, 94, and 95.

- Northwestern Portion of Building 104 – PCBs were detected in the concrete slab at the northwest corner of the building. PCBs were not detected at reportable concentrations in soil samples from borings 115, 116, 117, 118, and 119 located in this area of the building.

- Saw in Building 104 – PCBs were detected in soil to a depth of 3 feet bgs at borings 41, 73, and 110b. PCBs also were detected in the overlying concrete slabs near these boring locations and surrounding the location of the saw.

- Building 112A and West of Building 112A – Stoddard solvent and associated VOC compounds (naphthalene, trimethylbenzenes, and xylenes) were detected in soil vapor at depths of 5 and 15 feet bgs.

- Near Storm Water Outfall #6 – copper and lead were detected at a depth of 6.2 feet bgs at former boring 47, and arsenic was detected at a depth of 5.5 feet bgs at boring 113 at concentrations exceeding the SSLs.

In order to further evaluate these areas of impacted soil or concrete, the Phase II data, the Supplemental Phase II investigation data, and all other COPCs detected in soil and soil vapor at the Site were evaluated for potential human health risks using a screening-level HHRA pursuant to NCP 40 CFR 300.430(d)(1) and DTSC guidance and policy. A summary of the screening-level HHRA is presented in Section 5.

4.0 REMOVAL ACTIONS COMPLETED TO DATE

This section summarizes removal actions and follow-up, additional investigations performed by Alcoa, along with facility building demolition actions performed by Pechiney.

4.1 ALCOA'S PREVIOUS REMEDIAL ACTIVITIES

Consultants to Alcoa have previously conducted remediation activities in specific areas of the Site under the direction of the City of Vernon H&EC. These remediation activities are briefly described below.

- July to October 1992 – excavation of diesel fuel-impacted soil in conjunction with removal of three 10,000-gallon diesel USTs and a pump vault located south of electrical substation #2. The excavations were backfilled with engineered fill, compacted, and capped with concrete (OHM Remediation Services Corporation, 1992).

- January 1995 – removal of four 10,000-gallon Stoddard solvent USTs located west of Building 112A. The maximum excavation depth was 18 feet bgs. The area was backfilled with Stoddard solvent-impacted soil from 3 to 18 feet bgs. At that time, the City of Vernon H&EC "agreed that Alcoa could place the contaminated soil back into the excavation, provided that Alcoa would remediate the Site within a reasonable time frame" (CCG Group, Inc., 1995). A 6-mil plastic liner was placed over the Stoddard solvent-impacted soil, and clean soil was backfilled over the liner from 3 feet bgs to grade. The area was then capped with concrete.

  Following the removal of the Stoddard solvent USTs and delivery system in January 1995, Alcoa conducted a soil investigation to evaluate the extent of the Stoddard solvent impacts (Morrison Knudsen Corporation, 1995). A number of investigations were performed by Alcoa between 1995 and 2005 (Environmental Protection and Compliance, 2006), and these investigations are described below.

  - September through October, 1995 – Alcoa conducted an initial soil investigation to evaluate the extent of Stoddard solvent-related soil impacts beneath Building 112A and west of the building near the former Stoddard solvent USTs (Morrison Knudsen Corporation, 1995). The areas investigated included the former tube mill and roll stretcher machine area (Area "A" borings), the former tube mill Stoddard solvent dip tanks and vault (Area "B" borings), the scalper planar machine and Stoddard feed line area (Area "C" borings), and the Stoddard solvent still house and UST area (Area "D" borings). Soil borings were advanced to depths between 45 to 67.5 feet bgs and cone penetration test/rapid optical screening test (CPT/ROST) borings were advanced to depths between 34 and 80.7 feet bgs. Petroleum hydrocarbon analyses included quantification of total volatile hydrocarbons (TVPH; carbon-chain range of c6 – c10) and total extractable hydrocarbons (TEPH; carbon chain range of c10 – c28). The soil TVPH concentrations ranged between 1.1 mg/kg to 76,000 mg/kg and TEPH concentrations ranged between 5.4 mg/kg to 53,000 mg/kg. The highest concentrations of these compounds were detected in Area B at depths between 46.5 and 50 feet bgs. Several soil samples also were tested for BTEX compounds, and these compounds were detected in soil. Based on AMEC's review of the soil sample analytical results and qualitative petroleum hydrocarbon measurements obtained by CPT/ROST methods, the extent of these soil-impacts was assessed with the exception of two areas. The vertical extent of petroleum hydrocarbon-impacted soil was not completely assessed in Areas B and D. The approximate lateral extent of the Stoddard solvent-related soil impacts are shown on Figure 3.

- August to November 1995 – Alcoa completed laboratory bench-scale treatability testing on Stoddard solvent-impacted soils obtained from the subsurface in the vicinity of former solvent handling and storage areas within Building 112A. The testing was conducted to determine the applicability of in situ bioremediation of vadose zone soils. The treatability testing included the use bioslurry reactor vessels and soil column reactors (Alcoa Technical Center, 1996a.)

- Analytical testing indicated that appropriate environmental conditions (including pH, naturally occurring nutrients, indigenous microbial populations, and soil moisture) existed to depths of 45 feet bgs that would be supportive of in situ biodegradation of Stoddard solvent-impacted soil. The primary findings associated with the bioslurry reactor testing indicated that under optimal test conditions, 50 percent of the hydrocarbons were degraded within four weeks under aerobic conditions within the reactor, and that less than 5 percent of the hydrocarbons were lost due to volatilization. The primary findings from column reactor studies further supported that Stoddard solvent-impacted soils were amenable to biodegradation as hydrocarbon concentrations were reduced by 93 to 95 percent using a combination of biodegradation (80 percent) and volatilization (13 to 14 percent). Furthermore, significantly high levels of heterotrophic bacteria (10^8 to 10^9 colony forming units per gram of soil dry weight [cfu/gm-dw soil] and hydrocarbon degraders (10^5 to 10^6 cfu/gm-dw soil) were found to be present within the soil (Alcoa Technical Center, 1996a). The results indicated that the addition of moisture and nutrients did not significantly alter degradation rates of the hydrocarbons.

- In 1995, on behalf of Alcoa, Morrison Knudson Corporation and Groundwater Technology performed field trial tests to evaluate the applicability of soil vapor extraction (SVE) and bioventing technologies as remedial alternatives to mitigate the Stoddard solvent-impacted soils at the Site. Test procedures consisted of both vapor extraction and air injection with monitoring for oxygen, carbon dioxide, and soil gas. The report concluded that both technologies were viable and could be implemented if desired to remediate the Stoddard solvent-impacted soils (Alcoa Technical Center, 1996a).

- In 1996, Alcoa generated additional field respirometry testing data suggesting that naturally-occurring aerobic and anaerobic intrinsic bioremediation was on-going at the Site. The data indicated that natural aerobic degradation was occurring due to available molecular oxygen at rates of 200 to 400 milligrams per kilogram (mg/kg)/year. The data also indicated that much slower degradation rates of 7 mg/kg/year were occurring through anaerobic biodegradation. The report indicated that Alcoa proposed intrinsic bioremediation (also referred to as monitored natural attenuation) as the passive full-scale remediation approach for Stoddard solvent-impacted soils (Alcoa Technical Center, 1996b).

- September and October 2005 - Alcoa conducted addition soil testing in 2005 to monitor the progress of the natural degradation of Stoddard solvent-related soil impacts in Areas A, B, C and D (Environmental Protection and Compliance, 2006). AMEC compared the soil data collected in 2005 by Environmental Protection and Compliance to the soil data collected in 1995 by Morrison Knudsen Corporation to evaluate petroleum hydrocarbon concentration changes over time. The findings of this comparison are summarized below.

Area	Findings
A	• TVPH and TEPH concentrations decreased over time. • Remaining TVPH and TEPH maximum concentrations reported in 2005 were at 6,080 mg/kg and 6,200 mg/kg, respectively. • Concentrations greater than 1,000 mg/kg remain at depths of 30 and 40 feet. • Vertical extent of soil impacts was assessed to 60 feet.
B	• TVPH and TEPH concentrations increased over time at several depth intervals. • Remaining TVPH and TEPH maximum concentrations reported in 2005 were at 41,600 mg/kg and 60,600 mg/kg, respectively (at a depth of 45 feet in boring B-1). • Concentrations greater than 10,000 mg/kg remain at depths of 45 and 50 feet. • Vertical extent was not assessed; TPH impacted soil was detected to a depth of 50 feet.
C	• TVPH and TEPH concentrations decreased over time. • Remaining TVPH and TEPH maximum concentrations reported in 2005 were at 2,220 mg/kg and 2,500 mg/kg, respectively. • TVPH concentrations greater than 1,000 mg/kg remain at a depth of 15 feet and TEPH concentrations greater than 1,000 mg/kg remain at depth of 45 feet. • Vertical extent of soil impacts was assessed to 65 feet.
D	• TVPH and TEPH concentrations increased over time at several depth intervals. • Remaining TVPH and TEPH maximum concentrations reported in 2005 were at 6,020 mg/kg and 10,800 mg/kg (at 45 feet at boring D-2). • TVPH and TEPH concentrations greater than 1,000 mg/kg remain at depths of 15, 43, and 44.5 feet and TEPH concentrations greater than 10,000 mg/kg remain at a depth of 45 feet. • Vertical extent was not assessed; TPH impacted soil was detected to a depth of 45 feet.

- Based on the soil investigations and treatability testing described in a report prepared by Environmental Protection and Compliance in 2006, Alcoa recommended to the City of Vernon H&EC that long term natural attenuation of the Stoddard solvent-impacted soils beneath Building 112A be allowed to continue as a passive remedy (Alcoa Technical Center, 1996c). The City of Vernon H&EC replied that the remaining Stoddard solvent contamination still exceeded cleanup standards and required Alcoa to submit a plan by August 31, 2006 for active remediation of this area (City of Vernon, 2006). Alcoa has not submitted its active remediation plan and has not performed any additional monitoring or active remediation work in this area. Alcoa's refusal to submit an active remediation plan is documented in an August 30, 2006 letter that Alcoa submitted to the City of Vernon H&EC (Alcoa, 2006).

- April 1998 – excavation of TPH-impacted soil in conjunction with removal of the Stoddard solvent Tube Mill dip tank located in Building 112A. The maximum excavation depth was 15 feet bgs. The area was backfilled with pea gravel and capped with concrete (A.J. Ursic, Jr., 1999a).

- June 1998 – excavation of TPH-impacted soil in conjunction with the removal of a sump from the 3-inch tube reducer foundation located in Building 112A. The maximum excavation depth was 5 feet bgs. The area was backfilled with native soil and capped with concrete (A.J. Ursic Jr., 1999a).

- October 1998 – excavation of refractory and asbestos-containing materials found in soil in conjunction with the construction of a sanitary pipeline located east of Building 112A. The maximum excavation depth was 4 feet bgs. The area was backfilled with road base and capped with asphalt (A.J. Ursic Jr., 1999a).

- December 1998 – excavation of PCB- and TPH-impacted soil in conjunction with the removal of an inert waste disposal pit located west of Building 112A and south of the cooling tower. The maximum excavation depth was 45 feet bgs. Soil removal was terminated due to the proximity of the railroad tracks along the south and west sides of the excavation. The area was backfilled with soil and road base and capped with concrete (A.J. Ursic Jr., 1999a).

- January 1999 – excavation of PCB-impacted soil near storm water outfall #7 located west of Building 104. The maximum excavation depth was 6 feet bgs. The area excavated was limited by the presence of the adjacent sidewalk, building structures, and railroad tracks. The area was backfilled with road base (A.J. Ursic Jr., 1999b).

- April 1999 – excavation of PCB-impacted soil at the discharge point of storm water outfall #6 located southwest of the cooling tower. The maximum excavation depth was 2 feet bgs. The area was backfilled with road base (A.J. Ursic Jr., 1999a).

- April 1999 – excavation of PCB-impacted soil adjacent to the hot well along the north side of the cooling tower. The maximum excavation depth was 3 feet bgs. The area was backfilled with road base (A.J. Ursic Jr., 1999a).

- May 1999 – excavation of PCB-impacted soil in conjunction with removal of a former condenser pad located outside the northwest corner of Building 106. The maximum excavation depth was 2 feet bgs. The area was backfilled with native soil and capped with concrete (A.J. Ursic Jr., 1999b).

- May 1999 – Excavation of lead-impacted soil from a former ceramic disposal pit located beneath Building 135 on Parcel 6. The maximum excavation depth was 2 feet bgs. The area was backfilled with native soil and capped with asphalt (A.J. Ursic Jr., 1999c).

- June 1999 – excavation of PCB-impacted soil in conjunction with the removal of a French drain in Press Pit #2 located in Building 106. The maximum excavation depth was 7 feet bgs. The area was backfilled and capped with concrete (A.J. Ursic Jr., 1999b).

The areas where previous remediation activities occurred as described above, including approximate horizontal limits of the excavation, excavation depth, and concentrations of remaining chemicals of COPC, are shown on Figure 3.

4.2 ABOVE GRADE FACILITY DEMOLITION

Facility above-grade hazardous materials abatement and demolition were completed at the Site in November 2006 by Pechiney under the direction of the City of Vernon H&EC. The work included removal and recycling or disposal of all above-ground building structures. The concrete building slabs (including those impacted by PCBs) and surrounding pavements were not removed during the above-grade demolition work. Additional PCB testing of the concrete slabs was conducted in 2006 and is described earlier in Section 3.2.3. These features remain in-place and will be removed as part of the below-grade demolition described in this RAP. A summary of the above-grade demolition is included in the Above Grade Demolition Completion Report dated December 26, 2006 (Geomatrix, 2006e).

5.0 SUMMARY OF SITE RISKS

As part of the FS for the Site, and pursuant to NCP 40 CFR 300.430(d)(1) and DTSC guidance and policy, AMEC conducted a screening-level HHRA to evaluate the potential human health risks associated with exposures to COPCs at the Site. This screening-level HHRA was conducted for individual “Phase areas” at the Site (Phase I through Phase VI), that were developed to facilitate future below-grade demolition work and the anticipated plans for future site use(s); which may include the construction and operation of a power plant and/or commercial/industrial facilities. The HHRA is summarized in this section.

5.1 EXPOSURE POPULATIONS AND PATHWAYS

Potential risks were evaluated for human receptors under current and hypothetical future land use scenarios. Ecological receptors were not evaluated because the Site and surrounding areas are highly industrialized, providing poor quality habitat for such receptors.

Human receptors were identified based on anticipated plans for future site use(s); there is no current use of the Vernon Facility. Because the property is being purchased by the City of Vernon for commercial/industrial use with the potential that a portion of the Site will be used as a power plant, potential future receptors at the Site include outdoor and indoor commercial/industrial workers (e.g., power plant facility workers, workers under alternative commercial/industrial uses, and landscape workers), construction workers involved in future construction and grading activities, and short-term utility maintenance workers (although the construction worker is assumed to address potential on-site exposure by short-term utility maintenance workers). No other land use (i.e., residential) is reasonably anticipated for the Site given that a deed covenant is proposed to be issued for the property restricting zoning and use of the Site to commercial/industrial purposes. Furthermore, the City of Vernon zoning laws prohibit new residential development within the City of Vernon. Commercial/industrial workers at the surrounding facilities and short-term utility maintenance workers were considered potential off-site receptors.

On site, the exposure pathways considered potentially complete for outdoor commercial/industrial workers, construction workers, and utility maintenance workers include:

- incidental ingestion of soil;
- dermal contact with soil;
- inhalation of soil particulates in ambient air; and
- inhalation of VOCs in ambient air (released from soil, soil vapor, or groundwater).

For the soil pathways, exposure was only considered potentially complete for the upper 15 feet of soil. Exposure was also considered potentially complete for the soil pathways to COPCs in concrete, because on-site concrete may be crushed and reused as fill soil in excavations and foundation removal areas. Finally, exposure to indoor commercial/industrial workers was considered potentially complete via inhalation of VOCs in indoor air (released from soil, soil vapor, or groundwater).

Off site, exposure to COPCs in on-site soil was considered potentially complete for outdoor commercial/industrial workers and utility maintenance workers through inhalation of particulates and VOCs in ambient air. Exposure may also be potentially complete for off-site indoor commercial/industrial workers to VOCs moving from on-site groundwater or soil vapor into off-site indoor air. However, for COPCs detected in on-site soil, groundwater, or soil vapor, it was assumed the evaluation of on-site inhalation exposures would be protective of off-site inhalation exposures. Potential exposure to site-related COPCs in off-site soil vapor at the intersection of Fruitland and Boyle Avenues was evaluated separately. Potential beneficial use of groundwater also was evaluated for off-site receptors. Off-site groundwater use (primarily groundwater found in the first water bearing unit) was considered potentially complete based on the beneficial use designation as listed in the RWQCB Basin Plan (1994); on-site use of groundwater found in the first water bearing unit (interpreted to be the upper portion of the Exposition aquifer) will be restricted by the land use deed covenant proposed to be issued for the Site. Potential impacts of COPCs in soil and concrete to groundwater (i.e., leaching) were also evaluated.

5.2 RISK EVALUATION

Potential human health risks were evaluated using risk-based screening levels (RBSLs) developed using the methodology presented by the Office of Environmental Health Hazard Assessment (OEHHA) for California Human Health Screening Levels (CHHSLs) (OEHHA, 2005), and exposure parameters recommended by the DTSC (DTSC, 2005), as well as other recent OEHHA and DTSC guidance documents (OEHHA, 2009; DTSC, 2009). Potential off-site beneficial use of groundwater was evaluated using maximum contaminant levels (MCLs) instead of RBSLs.

Risks from exposure to COPCs in soil and soil vapor were evaluated independently for each Phase area by comparing maximum chemical concentrations to the RBSLs. Potential vapor intrusion risks from VOCs in groundwater were evaluated for the entire site by comparing site-wide maximum chemical concentrations in groundwater to RBSLs. Predicted lifetime excess cancer risks and non-cancer hazard quotients (HQs) were calculated from the ratios of concentrations to RBSLs, with cumulative effects from exposure to multiple chemicals evaluated by summing the chemical-specific cancer risks or HQs by exposure medium, and then summing across all media.

Potential exposure to crushed concrete and the potential off-site beneficial use of groundwater were evaluated separately. Potential exposure to crushed concrete was evaluated for each Phase area by comparing maximum chemical concentrations in concrete to the RBSLs for soil, and the potential beneficial use of groundwater off-site was evaluated by comparing site-wide maximum detected concentrations in groundwater samples from the first water-bearing unit to MCLs. In addition, potential impacts to groundwater from COPCs in soil and concrete (i.e., through leaching) were evaluated by comparing detected concentrations in soil to RWQCB or U.S. EPA Region IX groundwater protection criteria, and then developing site-specific screening levels for the COPCs above these criteria or for which the initial screening levels were not available.

The screening-level HHRA resulted in the following predicted lifetime excess cancer risks and noncancer HQs for indoor commercial/industrial worker, outdoor commercial/industrial worker, and construction worker exposure to COPCs in soil and soil vapor:

Area	**Cancer Risks**			**Noncancer Hazard Indices (HIs)**		
	Indoor C/I Worker	Outdoor C/II Worker	Construction Worker	Indoor C/I Worker	Outdoor C/II Worker	Construction Worker
Phase I	**4E-04**	8E-05	1E-05	**2**	0.01	0.1
Phase II	6E-07	**2E-03**	**3E-04**	0.004	0.01	0.06
Phase IIIa	--[1]	7E-05	1E-05	--[1]	1	**6**
Phase IIIb	3E-07	3E-07	5E-08	**53**	1	**4**
Phase IV	3E-07	1E-04	2E-05	**38**	**2**	**16**
Phase V	1E-07	5E-10	2E-08	0.002	0.003	0.03
Phase VI	--[1]	6E-05	1E-05	--[1]	0.4	**5**

Notes:

Cancer risks (greater than 1 x 10^{-4}) and HIs (greater than 1) above the ranges considered acceptable by regulatory agencies are **bold**.

1. No volatile organic compounds were detected in soil or soil vapor in the Phase IIIa or Phase VI areas.

As presented in the table above, for cumulative soil and soil vapor exposures, the predicted lifetime excess cancer risks for the indoor commercial/industrial worker in the Phase I area; the outdoor commercial/industrial worker in the Phase II area; and the construction worker in the Phase II area are above the risk management range. The other cancer risks estimated were either within or below this risk management range. The maximum predicted noncancer HIs for the indoor commercial/industrial worker in the Phase I, Phase IIIb, and Phase IV areas; the outdoor commercial/industrial worker in the Phase IV area; and the construction worker in the Phase IIIa, Phase IIIb, Phase IV, and Phase VI areas are above the acceptable range for noncarcinogenic effects (less than or equal to 1). The other HIs estimated for cumulative soil and soil vapor exposures were all at or below 1, with the majority well below 1. In summary, maximum concentrations of chemicals resulted in risks or hazard indexes above target levels in the Phase I, Phase II, Phase IIIa, Phase IIIb, Phase IV, and Phase VI areas for one or more receptors.

The COPCs that individually contributed cancer risk levels of at least $1x10^{-6}$ or HQs of at least 1 in the human health exposure evaluation and were identified as COCs in soil or soil vapor in the upper 15 feet of the vadose zone include:

- PCB mixtures Aroclor-1248, Aroclor-1254, and Aroclor-1260 in soil
- arsenic in soil
- TPH as c6-c10 hydrocarbons and c10-c20 hydrocarbons in soil
- chloroform, PCE, TCE, TPH as Stoddard solvent, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene in soil vapor

Concentrations of Aroclor-1248 and Aroclor-1254 in concrete in the Phase I area and concentrations of Aroclor-1248 and Aroclor-1260 in concrete in the Phase II area were found to exceed the outdoor commercial/industrial worker and construction worker cancer-based RBSLs. These mixtures were therefore also identified as COCs in concrete. Additional COPCs in soil were identified as exceeding the site-specific soil screening levels for the protection of groundwater and were thus identified as COCs: the BTEX compounds, 1,2-DCA, PCE, TCE, TPH as specific carbon ranges (c5-c10, c6-c10, c7-c12, c10-c20, c10-c28, and c21-c28), and TPH as Stoddard solvent. Finally, the COPCs in groundwater that exceeded their respective MCLs were identified as COCs: benzene, chloroform, 1,2-DCA, dichloromethane (i.e., methylene chloride), and TCE. With the exception of dichloromethane, these COCs were detected in groundwater as recent as 2006. No additional COPCs in groundwater were identified as COCs based on the screening of site-wide maximum detected groundwater concentrations against vapor intrusion RBSLs. Potential vapor intrusion risks from VOCs in groundwater were below the cumulative target cancer risk level and target HI proposed for the Site (10^{-5} and 1, respectively).

5.3 RISK-BASED REMEDIATION GOALS

Site-specific remediation goals were established for COCs in soil vapor, soil, and concrete at the Site under various future land use scenarios. In summary, the site-specific remediation goals established for such scenarios are summarized below and in Tables 1A, 1B, and 1C for VOCs in soil vapor; PCBs, metals and TPH in soil; and VOCs in soil, respectively:

Remediation Goals Established for COCs in Shallow Soil Vapor – relevant for future commercial/industrial use scenarios excluding the proposed power plant scenario (Tabled 1A):

1. VOCs in Shallow Soil Vapor (5 and 15 feet bgs)

- Chloroform – **6.7 µg/L**
- PCE – **7.3 µg/L**
- TCE – **21 µg/L**
- Stoddard solvent – **500 µg/L**
- 1,2,4-trimethylbenzene – **12.3 µg/L**
- 1,3,5-trimethylbenzene – **10.7 µg/L**

Remediation Goals Established for COCs in Soil and Concrete – relevant for all future commercial/industrial use scenarios, including the proposed power plant scenario (Table 1B):

2. PCBs in Shallow Soil (0 to 15 feet bgs)
    - Aroclor-1254 – **2.0 mg/kg**
    - Total PCBs – **5.3 mg/kg** for soil that may be left exposed at the surface (upper 5 feet); 35 mg/kg for soil to be left below pavement, ground cover, or 5 feet of "acceptable" crushed concrete (containing less than 5.3 mg/kg of PCBs).
3. PCBs in Concrete
    - Total PCBs – **5.3 mg/kg**
4. Metals in Shallow Soil (0 to 15 feet bgs)
    - Arsenic – **10 mg/kg**
5. TPH in Shallow and Deeper Soil (surface to groundwater, at approximately 150 feet bgs)
    - c5-c10 hydrocarbons, c6-c10 hydrocarbons, c7-c12 hydrocarbons, and TPH as Stoddard solvent – **500 mg/kg** (gasoline range hydrocarbons)
    - c10-c20 hydrocarbons and c10-c28 hydrocarbons – **1,000 mg/kg** (diesel range hydrocarbons)
    - c21-c28 hydrocarbons – **10,000 mg/kg** (residual fuel range hydrocarbons)

VOCs in Shallow and Deeper Soil (surface to groundwater, at approximately150 feet bgs) – depth-specific remediation goals for TCE, PCE, BTEX, and 1,2-DCA are presented in Table 1C.

Remediation goals were not established for the COCs identified in groundwater. A monitored natural attenuation (MNA) remedial approach will be applied to groundwater at the Site. As required by DTSC, an additional groundwater monitoring well will be installed in the northwest corner of the Site to support the MNA approach. This is discussed further in the FS.

6.0 EVALUATION OF ALTERNATIVES

The following technologies were retained in the FS and further considered and evaluated in detail.

- No action;
- Excavation and off-site landfill disposal for surface and shallow COC-impacted soil and deep VOC-impacted soil;
- In situ stabilization of shallow metals-impacted soil, Stoddard solvent-impacted soil and PCB-impacted soil;
- SVE for shallow and deep VOC-impacted soil;
- SVE and bioventing for shallow and deep Stoddard solvent-impacted soil; and
- Demolition and disposal of PCB-impacted concrete.

These technologies were combined in the FS into potential alternatives for mitigating COC-impacted areas at the Site and are further evaluated in Section 6.2.

6.1 EVALUATION PROCESS

The Health and Safety Code section 25356.1(d) requires that remedy evaluations be based on requirements contained within the NCP 40 CFR 300.430. The NCP identifies evaluation criteria (also known as balancing or evaluation criteria) to be used in the development and scoping of remedial alternatives to provide a basis for comparison using additional, more detailed criteria, referred to as evaluation criteria. The criteria include those developed by the U.S. EPA in the NCP 40 CFR 300.430(a)(1)(iii) as modified by the State of California. All nine balancing criteria are used in this RAP (Threshold Criteria, Primary Balancing Criteria, and Modifying Criteria). These criteria are further described below.

6.1.1 Evaluation Criteria

NCP-based evaluation criteria are described below.

- <u>Overall protection of human health and the environment</u> [40 CFR 300.430(e)(9)(iii)(A)]: Evaluates if the alternative provides adequate protection and if the risks posed through each pathway are controlled, reduced or eliminated; and how the remedy achieves, maintains, or supports protection of human health and the environment.

- Compliance with State and Federal requirements [40 CFR 300.430(e)(9)(iii)(B)]: Evaluates how the alternative complies with applicable federal/state/local requirements and guidelines.

- Long-term Effectiveness [40 CFR 300.430(e)(9)(iii)(C)]: Refers to the ability of the alternative to maintain long-term reliable protection of human health and the environment over time, after remediation goals have been met, and identify the conditions that may remain at the Site after the remedy objectives have been met. Evaluation of the alternatives will also include factors such as treatment residuals.

- Reduction of Toxicity, Mobility, or Volume through Treatment [40 CFR 300.430(e)(9)(iii)(D)]: An evaluation of alternatives using this criterion will define the anticipated performance of the specific treatment technology. Refers to the ability of the remedy to reduce the toxicity, mobility and volume of COCs, the type and quantity of treatment residuals that will remain, and the degree to which the treatment will be irreversible.

- Cost [40 CFR 300.430(e)(9)(iii)(G)]: This assessment will evaluate the capital and operation and maintenance (O&M) costs for each alternative. The cost estimates will be assessed as capital cost, annual O&M cost, and present worth analysis.

- Short-term effectiveness [40 CFR 300.430(e)(9)(iii)(E)]: Evaluates the period of time necessary to implement the remedy, and identifies any adverse impact on the community, protection of workers, and potential environmental impacts that may arise during the implementation of the remedy, until the remediation goals are met.

- Implementability [40 CFR 300.430(e)(9)(iii)(F)]: Refers to the technical and administrative feasibility of implementing an alternative. Factors to be considered include construction and operation, monitoring duration considerations, required permits, and availability of necessary services and materials.

- Regulatory Agency Acceptance [40 CFR 300.430(e)(9)(iii)(H)]: Indicates whether the applicable regulatory agencies, after their review of the information, are in agreement with the preferred alternative.

- Community Acceptance [40 CFR 300.430(e)(9)(iii)(I)]: Indicates whether or not the community has a preference with regard to the remedy and if their concerns are being met.

6.2 DESCRIPTION AND EVALUATION OF REMEDIAL ALTERNATIVES

This section describes the remedial alternatives that were retained from the evaluation performed in the FS to address each COC. These alternatives are described below and evaluated against the Evaluation Criteria presented in Section 6.1.1 and summarized in Table 2.

6.2.1 Alternative 1

No Action

Alternative 1 consists of "No Action" and is included for evaluation pursuant to NCP 40 CFR 300.430(e)(6) and retained for comparison purposes. No below-grade demolition or soil remediation would be performed. "No Action" is not a viable alternative.

6.2.2 Alternative 2

Excavation and Disposal of COC-Impacted Soil and Demolition and Disposal of PCB-Impacted Concrete

Alternative 2 consists of excavation and off-site disposal of shallow and deep COC-impacted soil (metals, PCBs, Stoddard solvent, and VOCs) to depths of approximately 8 feet bgs for metals, 12 feet bgs for PCBs, and 50 feet bgs for VOCs and Stoddard solvent, respectively. Excavation will require installation of shoring for sidewall stability and safety during soil removal. This alternative also includes demolition and landfill disposal of concrete slab containing PCB concentrations greater than 5.3 mg/kg.

6.2.3 Alternative 3

Excavation and Disposal of Shallow COC-Impacted Soil, SVE for Shallow and Deep VOC-Impacted Soil, SVE and Bioventing for Shallow and Deep Stoddard Solvent-Impacted Soil, and Demolition and Disposal of PCB-Impacted Concrete

Alternative 3 consists of excavation and off-site disposal of shallow COC-impacted soil (PCBs and metals) to depths of approximately 12 feet bgs. Shallow (up to 50 feet bgs) and deep (up to 90 feet bgs) VOC-impacted soil would be mitigated using SVE. Shallow (up to 50 feet bgs) Stoddard solvent-impacted soil would be mitigated using sequential treatment consisting initially of SVE, followed by longer term bioventing. This alternative also includes demolition and landfill disposal of PCB-impacted concrete slabs with PCB concentrations greater than 5.3 mg/kg. Non-PCB-impacted concrete (less than 5.3 mg/kg) would be crushed and reused on-site as unrestricted fill material.

6.2.4 Alternative 4

In Situ Stabilization of Shallow PCB/Metals-Impacted Soil and Deep Stoddard Solvent-Impacted Soil, SVE for Shallow and Deep VOC-Impacted Soil, and Demolition and Disposal of PCB-Impacted Concrete

Alternative 4 consists of in situ stabilization (ISS) of shallow PCB- and metals-impacted soil and deep Stoddard solvent-impacted soil, using a cement-based additive to depths of approximately 12 feet bgs for PCB- and metals-impacted soil and approximately 50 feet for Stoddard solvent-impacted soil. Shallow (up to 50 feet bgs) and deep (up to 90 feet bgs) VOC-impacted soil would be mitigated using SVE. This alternative also includes demolition and off-site disposal of concrete slabs containing PCB concentrations greater than 5.3 mg/kg.

6.3 SUMMARY ANALYSIS OF ALTERNATIVES AGAINST THE NINE CRITERIA

The four alternatives are analyzed below using the nine evaluation criteria.

6.3.1 Overall Protection of Human Health and the Environment

All of the alternatives, with the exception of the "No Action" alternative, meet this criterion by mitigating shallow COC-impacted soils and PCB-impacted concrete containing COC concentrations above the site-specific remediation goals, and eliminating source areas that could potentially impact groundwater.

6.3.2 Compliance with Applicable Requirements

All of the alternatives, with the exception of the "No Action" alternative, meet this criterion. Because the "No Action" alternative would not be protective of human health and the environment and would not meet the remediation goals for the Site, Alternative 1 will not be discussed further in the criteria analysis below.

6.3.3 Long-Term Effectiveness and Permanence

All of the alternatives would eliminate human exposure pathways between future receptors and soil, soil vapor, recycled concrete, and airborne dust. In addition, the SVE with bioventing as included in Alternative 3 and SVE as included in Alternative 4, are considered presumptive remedies, are minimally invasive, and can achieve site-specific remediation goals for shallow and deeper VOC- and Stoddard solvent-impacted soil.

6.3.4 Reduction of Toxicity, Mobility and Volume Through Treatment

Alternatives 2 and 3 would reduce the toxicity, mobility, and volume of COC-impacted soil and PCB-impacted concrete. Alternative 4 would reduce the toxicity, mobility, and volume of PCB-impacted concrete and deeper VOC- and Stoddard solvent-impacted soil. Alternative 4 would also reduce the mobility of shallow COC-impacted soils, but volume and toxicity would not be significantly reduced by ISS treatment.

6.3.5 Cost

Costs for the excavation components in Alternatives 2 and 3 were based on an excavation rate of 500 cubic yards per day and confirmation sample rate of one sample per 200 cubic yards of excavated material. Shoring costs are included in all proposed excavation areas greater than 10 feet. Waste management costs associated with landfill disposal were estimated assuming that 90 percent of the waste is classified as a non-hazardous waste and 10 percent of the waste is classified as a hazardous waste. Average thickness of the PCB-impacted concrete slabs was assumed to be 12 inches.

Costs for SVE for VOC-impacted soil in Alternatives 3 and 4 were based on rental of two 500 cubic feet per minute (cfm) South Coast Air Quality Management District (SCAQMD)-permitted systems operating for 12 months prior to power plant construction, then subsequent additional operation after construction for an additional two year period. Bioventing costs include operation of a SVE system for 3 months followed by operation of a pulsed air injection system over a three year period.

Costs for soil stabilization in Alternative 4 are based on a stabilization rate of 300 cubic yards per day, maximum stabilization depth of 50 feet bgs, and a stockpile confirmation sample rate of one sample per 200 cubic yards. Cement-mixing-additives are assumed to be 10 percent of the stabilization material for cost estimating purposes. Cost assumes 20 percent of the mixed volume requires off-site disposal. Waste management costs associated with landfill disposal were estimated assuming that 90 percent of the waste would be classified as a non-hazardous waste and 10 percent of the waste would be classified as a hazardous waste. Estimated total capital cost for Alternatives 2, 3 and 4 are summarized in Table 2 and additional cost detail is provided in Appendix A.

6.3.6 Short-Term Effectiveness

All of the alternatives will reduce risk to receptors and the environment if appropriate personal protective equipment (PPE) is worn by site workers; and if dust, noise and odor controls are implemented. Alternative 2 would have the greatest short-term impacts on the community and the workers due to potential air emissions produced during large-scale excavation activities. Alternatives 3 and 4 would have the least short-term impacts (with Alternative 3 being the least) on Site workers because deeper soil impacts would be mitigated using less invasive in-situ remedial technologies.

6.3.7 Implementability

The technologies employed in Alternatives 2, 3 and 4 are reliable and have proven effective in previous field applications. Implementation is relatively straightforward using commercially available materials and equipment.

Additionally, the SVE and bioventing technologies associated with Alternatives 3 and 4 are considered presumptive remedies and have been demonstrated as effective on numerous other sites impacted by organic COCs similar to those present at the Site. Previous site-specific bench-scale treatability studies performed by Alcoa also demonstrated that the Stoddard solvent-impacted soils are amenable to bioventing as contained in Alternative 3. SCAQMD permits must be obtained for operation of the SVE systems for both VOC- and Stoddard solvent-impacted soils along with a monitoring and reporting program after system start-up.

Soil stabilization as described in Alternative 4 requires a bench-scale mix design test and mobilization of a crawler-mounted large diameter auger drilling rig. Shoring or other slope stability controls are required for all remedy components that include soil excavations greater than four feet deep.

7.0 PREFERRED REMEDIAL ALTERNATIVE

Alternative 3, which consists of excavation and disposal of shallow COC-impacted soil, SVE for shallow and deep VOC-impacted soil, SVE and bioventing for shallow and deep Stoddard solvent-impacted soil, and demolition and disposal of PCB-impacted concrete, is the preferred remedial alternative described in Section 6.2.3. Alternative 3 is selected because it satisfies the balancing criteria discussed above, as required by Health and Safety Code section 25356.1(d) and the NCP, and will not require extensive soil excavation and off-site disposal. Alternative 3 is preferred to Alternative 4 because Alternative 3 will reduce the toxicity, mobility, and volume of COC-impacted soil to a greater extent than Alternative 4. Alternative 3 consists of soil excavation and disposal and SVE and bioventing in a balanced mitigation strategy that is the most cost-effective, is minimally invasive, and is protective of human health and the environment. Implementation of the remediation components associated with Alternative 3 is described below. If the power plant project is not approved, implementation phasing of the preferred remedy may change.

7.1 PCB-IMPACTED CONCRETE REMEDIAL ACTION IMPLEMENTATION

The preferred remedial approach for PCB-impacted concrete is demolition and disposal at an offsite landfill facility. This portion of the remedy will be implemented in conjunction with below-grade demolition of surface slabs and pavements.

Based on the results of the screening HHRA and attenuation modeling for protection of groundwater, a site-specific PCB remediation goal of 5.3 mg/kg has been proposed to be applied as the crushed concrete reuse criterion. Concrete that exceed the remediation goal cannot be reused on-site and will be removed and disposed off-site during below-grade demolition. Concrete debris will be transported to an offsite landfill facilities designated to receive PCB-containing wastes. Concrete slabs with PCB concentrations less than 5.3 mg/kg will be crushed on-site and reused without restrictions as excavation backfill and during Site grading. Figure 4 shows concrete sampling concentrations and locations, and defines areas where PCB concentrations in concrete exceed 1 mg/kg, 5.3 mg/kg, and 50 mg/kg.

7.1.1 Site Preparation

PCB-impacted concrete will be demarcated at the Site by painting a “cut line” on the slab to identify those areas previously delineated by concrete coring and laboratory analytical testing. The cut line will encircle areas previously identified to contain PCB concentrations greater than

5.3 mg/kg but less than 50 mg/kg (handled as a non-TSCA, non-hazardous waste). Slab areas where PCB concentrations exceed 50 mg/kg will also be delineated for separate handling and disposal as a TSCA hazardous waste.

7.1.2 Slab Removal and Stockpiling

Slabs will be saw-cut along demarcation lines to facilitate removal using construction equipment. PCB-impacted slabs will be removed, sized for handling, and temporarily stockpiled on-site in separate piles based on concentrations, prior to disposal. In areas with PCB-impacted concrete, the concrete slabs will be observed during removal for multiple layers of concrete and visible staining. Concrete slabs or below grade structures exhibiting visual signs of staining will be segregated for sampling and analysis for PCBs. During periods of inactivity, PCB-impacted concrete stockpiles will be covered to prevent exposure to rainwater. Contractor stockpiling activities will be performed pursuant to Section 02114 of the Below Grade Demolition and Soil Excavation Technical Specifications (Technical Specifications) (Appendix B).

7.1.3 Soil Sampling Beneath PCB-impacted Concrete

In areas where soil characterization data do not already exist beneath PCB-impacted concrete slabs with PCB concentrations above 5.3 mg/kg, additional soil characterization samples will be collected after slab removal is complete. The frequency by which these soil samples will be collected will be selected in the field using the sampling frequency provided below.

Concrete Slab Areas (in feet)	Grid Spacing	Additional Samples	Estimated Number of Samples
Horizontal dimensions up to approximately 10 by 10 feet	None	− 1 soil sample at the center of the exposed soil area, or directly beneath the location where the concrete core sample exhibited the highest PCB concentration	1
Horizontal dimensions up to approximately 20 by 20 feet	Grid divided into 2 equal parts	− 2 samples; one from the center of each grid part − 1 sample; directly beneath the location where the concrete core sample exhibited the highest PCB concentration	3
Horizontal dimensions up to approximately 50 by 50 feet	Grid divided into 4 equal parts	− 4 samples; one from the center of each grid part − 1 sample; directly beneath the location where the concrete core sample exhibited the highest PCB concentration	5

The actual number of confirmation soil samples collected from beneath the PCB-impacted slabs will be selected in the field based on the size of the area and the location of adjacent footings and below-grade structures. These confirmation samples will be collected using the procedures described in Appendix B of the Quality Assurance Project Plan (QAPP) (Geomatrix, 2007).

7.1.4 Concrete Profiling, Transportation, and Disposal

Concrete characterization data or additional concrete sampling data collected during below-grade demolition will be used to create a waste disposal profile at a facility permitted to receive PCB-impacted wastes. Impacted concrete will then be loaded into trucks for transportation off-site for landfill disposal pursuant to Section 02120 of the Technical Specifications (Appendix B). Each truck load will be covered with either a tarpaulin or plastic sheeting prior to departing the jobsite and all truck exteriors will be inspected and cleaned of any loose soil or concrete debris that may be present on the truck exterior associated with loading activities. The contractor will take proper measures to prevent Site soil or debris from being tracked onto adjacent City right-of-ways during off-site shipment. All loads will be properly manifested and placarded.

7.2 SURFACE/SHALLOW COC-IMPACTED SOIL REMEDIAL ACTION IMPLEMENTATION

The preferred remedial technology for surface and shallow COC-impacted soil is excavation and off-site landfill disposal. These remedial excavation areas are shown on Figure 5. This remedy will be implemented after below-grade demolition of surface slabs and pavements, utilities and pipelines, pits, sumps, and other deeper structures is complete.

7.2.1 Groundwater Monitoring Wells

As required by DTSC, an additional groundwater monitoring well will be installed in the northwest corner of the Site to support the MNA groundwater approach. The newly installed groundwater monitoring well and the remaining three groundwater monitoring wells AOW-6, AOW-8, and AOW-9 (located in the Phase IIIb and Phase IV areas), will remain in place and protected during demolition. These wells will be used to obtain current groundwater flow direction information, and groundwater samples will be periodically monitored for VOCs and natural attenuation parameters. When required, the wells will be destroyed in accordance with applicable guidelines listed in the California Department of Water Resources Bulletin 74-81 and 74-90 upon completion of remediation of the Stoddard solvent-impacted soil and upon receipt of authorization from the DTSC.

7.2.2 Site Preparation

Site preparation includes obtaining necessary permits, implementation of storm water and dust controls, and installation of excavation shoring prior to soil removal. These tasks are further described below.

7.2.3 Storm Water Controls

Storm Water Best Management Practices will be implemented and maintained around the excavation perimeter and soil stockpiling areas pursuant to Section 01502 of the Technical Specifications (Appendix B) and the contractor's Storm Water Pollution Prevention Plan (SWPPP).

7.2.4 Dust Controls and Perimeter Air Monitoring

Dust control measures will be implemented during soil excavation and handling pursuant to Section 01501 of the Technical Specifications (Appendix B). Site perimeter air monitoring will be conducted as described in Appendix C of the QAPP (Geomatrix, 2007).

7.2.5 Shoring

Site preparation may require installation of shoring around the perimeter of each proposed excavation area pursuant to Section 02260 of the Technical Specifications (Appendix B). A Shoring Plan will be prepared by the contractor and submitted to the City for review and approval prior to actual shoring installation.

7.2.6 Excavation and Stockpiling

Soil will be excavated using a track-mounted excavator capable of removing soil to depths of greater than 15 feet bgs. Soil will be excavated to the lateral and vertical extent of known COC-impacts based on previous site characterization sampling data. Excavated soil will be staged adjacent to the excavation and then transferred to a lined and bermed temporary stockpile located on-site. Contractor soil stockpiling activities will be performed pursuant to Section 02114 of the Technical Specifications (Appendix B).

7.2.7 Confirmation Sampling and Waste Profiling

Confirmation soil sampling within open excavation areas will be conducted using the procedures described in Appendix B of the QAPP (Geomatrix, 2007). Soil samples will also be collected from the temporary stockpile for waste profiling purposes to meet the acceptance criteria of the receiving facility, prior to off-site landfill disposal. Soil analytical testing will be performed to meet the waste profile requirements of the receiving facility.

7.2.8 Off-Site Disposal

COC-impacted soil will be loaded into trucks and shipped off-site for landfill disposal pursuant to Section 02120 of the Technical Specifications (Appendix B). Each truck will be covered with either a tarpaulin or plastic sheeting prior to departing the jobsite, and all truck exteriors will be inspected and cleaned of any loose soil that may be present on the truck exterior after loading. The contractor will take proper measures to prevent Site soil from being tracked onto adjacent

City right-of-ways during off-site shipment. All loads will be properly manifested and placarded.

7.2.9 Backfilling and Grading

Excavation areas will be backfilled with recycled crushed aggregates obtained from on-site crushing of concrete demolition debris. Aggregates will be crushed to the gradations provided in Section 02050 of the Technical Specifications (Appendix B), and will be backfilled and compacted pursuant to Section 02351 of the Technical Specifications (Appendix B).

7.2.10 Schedule for Implementation

Excavation and off-site disposal of the COC-impacted soil will be performed by the contractor during the implementation of below-grade demolition and soil excavation work. Below-grade demolition work is anticipated to start after agency approval of the RAP and completion of the public participation activities. It is anticipated that the below-grade demolition work can be completed in approximately three months, excluding any potential weather-related delays.

7.3 SHALLOW AND DEEP VOC-IMPACTED SOIL REMEDIAL ACTION IMPLEMENTATION

The preferred remedial technology for shallow and deep VOC-impacted soil (containing TCE, PCE and benzene) in the Phase I area is SVE. This remedy will be implemented upon completion of below-grade demolition associated with slab, foundation, footing, and other structure removal in the Phase I area at the Site. A network of SVE wells will be installed with well screen intervals both above and below the fine-grained soil unit present from approximately 50 to 70 feet bgs in the northern portion of the Site. SVE wells will be installed within the area of known impacts and at other locations where VOCs were detected during the soil vapor survey at concentrations that exceeded screening levels. Soil cuttings will be contained as investigation-derived waste (IDW) for profiling and off-site disposal. Specific details regarding the SVE system and associated remediation equipment are provided below.

7.3.1 Site Preparation

After completion of below-grade demolition and limited soil excavation work related to footings and foundations removals in the Phase I area, the area will be re-graded and compacted. The area will be topographically lower than previous Site conditions prior to foundation and soil removal. A four- to six-inch thick layer of crushed recycled aggregates will be spread across the Phase I area to provide a suitable working surface during implementation of SVE.

A three-phase, 240-volt, 200-ampere temporary electrical power service panel will be installed on a temporary power pole in the northwest corner of the Site to obtain electricity from existing power lines located along Fruitland Avenue. The temporary power pole and electrical service panel will be required to operate the SVE system, and will be located inside the existing concrete perimeter wall near the intersection of Boyle and Fruitland Avenues.

7.3.2 Well Installation

SVE wells will be installed in the Phase I area at two specific depth intervals as presented below.

SVE Well Depth	Well Screen Interval (feet bgs)	Estimated Well Radius of Influence	Well Lateral Spacing	Number of Wells
Surface to 50 feet bgs	40 to 50	60 to 75 feet	100 to 120 feet	15
Surface to 90 feet bgs	80 to 90	85 to 100 feet	200 to 240 feet	4

The approximate number of SVE wells proposed in the RAP was based on previous knowledge of radius of influence (ROI) values for similar types of lithologies observed at different sites. The shallow screen intervals are located at the approximate depths of soil samples containing elevated VOC concentrations. The bottom of the screen interval (50 feet below ground surface) is approximately at the top of a fine-grained unit in the lithology. The deeper screen intervals are located near the approximate depths of deeper soil samples that contained elevated VOC concentrations. The top of the deeper screen interval (80 feet bgs) is approximately at the bottom of a fine-grained unit in the lithology. Figures 6 and 7 provide the proposed SVE well locations.

Prior to start-up, soil vapor samples will be collected from the SVE wells to establish baseline conditions. An evaluation of the effective area of influence will be performed at the Site after the proposed SVE well network is installed. Additional SVE wells may be added based on effective area of influence both above and below the fine-grained unit. Wellhead completions will consist of an above-ground flow-controlling ball valve and sample port for periodic soil vapor sampling and area of influence monitoring. Each SVE well will be constructed using Schedule 40 polyvinyl chloride (PVC) pipe with a 0.020-inch slot screen size, a sand filter pack surrounding the well screen, a bentonite seal, and a concrete surface seal.

7.3.3 Temporary Piping

SVE wells will be connected to the treatment equipment by temporary Schedule 40 PVC piping and/or flexible suction hose placed directly on the gravel surface. Vapor will be conveyed to a common header line, adequate to support the combined soil vapor pressures and flow rates from each SVE well, and then to the portable SVE equipment for treatment.

7.3.4 Treatment Equipment

The treatment equipment will consist of a trailer- or skid-mounted system with a SCAQMD Various Locations permit. The equipment will include a moisture knockout drum, a blower/compressor capable of applying a vacuum of 100 inches of water and a flow rate of 500 cfm, a minimum of two (2) 1,000-pound vapor-phase granular activated carbon (vGAC) vessels, and associated equipment connections. The size and arrangement of the vGAC vessels will depend on the specific requirements of the SCAQMD permit. The moisture knockout drum will be situated upstream of the compressor/blower with the vGAC vessels configured in series and installed downstream of the compressor/blower. The system will be connected to the SVE well piping grid. An SVE process flow diagram is presented on Figure 8.

The compressor/blower will convey extracted soil vapor from the SVE well field to the common header line, through the moisture knockout drum, and then to the vGAC vessels. Moisture that collects in the knockout drum will be manually pumped or transferred to and stored in 55-gallon capacity Department of Transportation-approved drums. The drums will be characterized and transported off-site for disposal on an as needed basis. Treated soil vapors conveyed through the vGAC vessels will be discharged to the atmosphere in compliance with SCAQMD permit conditions.

Based on the results of periodic soil vapor monitoring, a second permitted SVE system may be mobilized to the Site and added to the piping network to expedite SVE remediation.

7.3.5 Operations, Maintenance, and Monitoring

Following installation of the SVE system, start-up testing/monitoring will be conducted to evaluate the efficiency and operation of the system. The start-up testing will include a diagnostic check of each component including, but not limited to, the knockout drum controls, compressor/blower operation, emergency shutdown controls, high temperature and level alarms, and leaks in piping.

Operation of the SVE system will begin after completing start-up testing. The system will be monitored initially by demolition observation field personnel already present on site at a minimum of twice per week during the first month of operation. Operating personnel will collect measurements that will be used to evaluate the system’s overall performance and effectiveness in remediating the VOC-impacted soils. Field measurements will consist of recording system operating parameters including: hours of operation, operating temperatures, extraction flow rates, and inlet and outlet vapor concentrations for the vGAC vessels. SVE system monitoring will be performed in compliance with the SCAQMD permit requirements or minimally on a weekly basis.

Maintenance performed during routine system inspections and/or monitoring will comply with SVE vendor and/or equipment specifications. As part of the monitoring of the system, influent and effluent concentrations will be measured using a portable organic vapor meter such as a photoionization detector (PID), which detects and quantifies organic vapors. Results of operation monitoring will be recorded on emission monitoring logs. Influent and effluent vapor samples will be collected in a 1 liter tedlar bag using an oil-less sampling pump and submitted to an analytical laboratory on a monthly basis for the analyses prescribed in the SCAQMD permit. Additional monitoring will be performed in accordance with the SCAQMD permit to operate.

7.3.6 Schedule for Implementation and Completion

SVE of shallow and deep VOC-impacted soil will commence after below-grade demolition and soil excavation are completed in the Phase I area. The milestone phasing and completion of work as described in Section 01110 of the Technical Specifications (Appendix B) require the contractor to complete below-grade demolition work in the Phase I area within 40 calendar days after mobilizing to the Site and installation of required temporary facilities and controls. SVE system installation and SVE operations will begin approximately four weeks after contractor completion of below grade demolition work in the Phase I area.

SVE operation will continue until power plant (or other commercial/industrial) construction commences or until effluent vapor monitoring from SVE wells indicate vapor concentrations have reached asymptotic conditions. If Site construction is delayed and subsurface concentrations still warrant SVE operations beyond 12 months, a site-specific SCAQMD permit will be obtained.

If asymptotic conditions have not been reached prior to power plant (or other commercial/industrial) construction, SVE operation will be suspended until construction is complete. After completion of construction, SVE operation will be restarted, and if needed, new SVE wells will be installed and operated until asymptotic conditions are reached. The system will then be shut-down to undergo vapor rebound testing, followed by additional operations as necessary. Post-remediation soil matrix confirmation sampling will be performed in previously defined VOC hot spot areas upon completion of rebound testing and termination of SVE operation.

While future Site development may limit physical access into certain areas, efforts will be made to obtain soil matrix samples from approximate locations consistent with previous VOC characterization sampling events in the VOC impacted areas. Approximately six soil borings will be advanced to groundwater and eight soil samples will be collected from both above and below the fine-grained unit located at a depth of approximately 50 feet bgs. These soil samples will be analyzed for VOCs using EPA 8260B/5035. Soil sampling results may be used to document the remaining concentrations of VOCs in soil for a deed covenant for the Site.

7.4 SHALLOW AND DEEP STODDARD SOLVENT-IMPACTED SOIL REMEDIAL ACTION IMPLEMENTATION

The preferred remedial technology for the shallow and deep Stoddard solvent-impacted soil in the Phase IIIb and Phase IV areas is SVE and bioventing. This remedy will be implemented during the below-grade demolition and soil remediation activities at the Site and the subsequent construction of the proposed power plant (or other commercial/industrial facility). Although bioventing is related to the process of SVE, and both technologies involve movement of air through the subsurface, the differences in objectives result in different design and operational requirements of the remedial systems (Leeson & Hinchee, 1996). The major distinction between these technologies is that SVE optimizes removal of low-molecular weight compounds by volatilization achieved through high rates of vapor flow extraction (under vacuum). SVE will be performed initially to remove the approximately 15 percent volatile fraction of COCs present in the Stoddard solvent areas. When vapor monitoring data indicate asymptotic conditions have been reached, the SVE system will be converted to a bioventing remedial process to continue the in situ remediation process of the less volatile hydrocarbon compounds remaining in the subsurface.

Bioventing optimizes biodegradation of aerobically degradable compounds using much lower air flow rates than those required for SVE systems, thus minimizing both volatilization and capital costs. The system conversion to bioventing would consist of reversing the air flow direction by injecting atmospheric air into the subsurface through the SVE piping grid and well points at a greatly reduced flow rate. Air injection would be achieved in a pulsed or intermittent manner, for the equivalent of approximately one day per week. Air injection rates will be modified as needed (increase or decreased) based on oxygen utilization rates.

A network of venting wells will be installed to depths of approximately 50 feet bgs in the areas where Stoddard solvent COCs exceed site-specific remediation goals. Specific details regarding the SVE and bioventing system and associated remediation equipment/components are provided below.

7.4.1 Site Preparation

Existing surface slabs and below-grade footings will be left intact in the Phase IIIB and IV areas during implementation of the in situ SVE and bioventing remedy to reduce odors and dust from the Stoddard solvent-impacted areas. The existing building slab will also provide a working surface for equipment and materials staging associated with adjacent power plant construction and for the protection of the below-grade piping and wells during construction.

A three-phase, 240-volt, 100-ampere temporary electrical power service will be installed in the vicinity of the south end of former Building 112A to power the SVE and bioventing system equipment.

7.4.2 Well Installation

Venting wells will be installed in the Phase III and IV area at a single depth interval as presented below.

Vent Well Depth	Well Screen Interval (feet bgs)	Well Lateral Spacing	Number of Wells
Surface to 50 feet bgs	15 to 50	60 to 120 feet	15

Figure 9 provides the locations of the proposed SVE and bioventing wells. Wellhead completions will consist of a flush-mount well box to contain a flow-controlling ball valve and sample port for soil gas monitoring. Each vent well will be constructed with a 2-inch diameter Schedule 40 PVC pipe with a 0.020-inch slot screen, sand filter pack, bentonite seal and concrete surface seal. Wells installed for initial SVE operation will also be used during subsequent bioventing activities. Prior to start-up, soil vapor samples will be collected from the SVE wells to establish baseline conditions.

7.4.3 Well Piping

SVE and bioventing wells will be connected to the treatment equipment with Schedule 40 PVC piping placed in below grade trenches constructed by saw-cutting and removing surface concrete slabs along designated piping corridors. Piping trenches will be backfilled to slab grade with a one-sack cement slurry. In some slab perimeter locations located adjacent to or away from potential site construction lay-down area, conveyance piping may be installed above ground.

7.4.4 Treatment Equipment

Initial SVE operations will be performed using a trailer-mounted system in conformance with a SCAQMD Various Locations permit. The system will be similar in configuration to the SVE unit proposed to remediate shallow and deep VOC-impacted soil as described in Section 7.3. The equipment will consist of a compressor/blower, two (2) 1000-lb vGAC vessels, moisture knockout drum, and associated equipment connections. Extracted condensate captured in the moisture knockout drum during SVE operations will be characterized and transported off-site for disposal on an as-needed basis.

Bioventing equipment will consist of a separate skid-mounted system comprised of a 1.0 horse power (h.p.) single-phase electric- regenerative blower capable of injecting air up to 150 cfm at 15 pounds per square inch. The blower will be equipped with a dilution air valve and temperature probe. Atmospheric air will be injected at low-flow rates of approximately 1 to 3 cfm per well in a pulsed or intermittent manner, through a common header line that connects to each well to provide oxygen to native soil microbes. No exhaust gases or fugitive emissions will be generated that require treatment because the compressor/blower will be injecting air at a very low rate, no vent wells will be open to the atmosphere, and the former building slab will remain in place. A bioventing process flow diagram is presented on Figure 10.

7.4.5 Operations, Maintenance, and Monitoring

The SVE system will operate initially and be monitored bi-weekly until effluent vapor monitoring from vent wells indicate vapor concentrations have reached asymptotic conditions. After asymptotic conditions are reached, the system will be converted to bioventing without pulse-mode operation or performance of rebound testing. Pulse mode operations or rebound testing will not be performed because continued remediation of the Stoddard solvent impacts will be achieved through the bioventing process. Bioventing will degrade the less volatile hydrocarbon fraction still present along with any residual volatile constituents that may still be present and are degrading. Following conversion of the SVE and bioventing equipment, start-up will consist of a diagnostic check of the treatment equipment and adjusting the air flow at each vent well. Once operational, the bioventing system will require very little maintenance and monitoring.

In situ respiration (ISR) testing would be periodically conducted to monitor oxygen utilization rates and carbon dioxide production rates to evaluate progress of remediation. Methane, carbon dioxide, oxygen, differential pressure, static pressure, and temperature will be measured using a landfill gas monitor during each monitoring event. The measurements will be recorded in a daily field log. The ISR testing would be performed immediately upon startup to evaluate the rate of which the treatment zone is oxygenated and to measure initial oxygen utilization rates. The frequency of the ISR testing will be at a minimum monthly for the first six months of operation and quarterly thereafter. Monitoring frequency will be adjusted based on monitoring results. ISR rates can be expected to vary over time and a general decrease in rates over the longer term of hydrocarbon biodegradation. Remediation monitoring reports will be provided to DTSC on a quarterly basis during the first year of operation, then semi-annually thereafter until remediation is deemed complete.

The system will be operated until soil gas monitoring results through existing vent wells indicate biodegradation is no longer occurring at a significant rate. Soil confirmation sampling will then be performed to substantiate that site-specific remediation goals have been achieved for the Stoddard solvent related COCs, and, if necessary to support a deed covenant for the Site.

When the use of the Phase IIIB and IV areas are no longer needed for site construction laydown and staging, the surface slab and below grade structures will also be demolished and removed in a manner similar to other parts of the Site.

7.4.6 Schedule of Implementation and Completion

SVE and bioventing of shallow and deep Stoddard solvent-impacted soil will begin within 30 days after Site mobilization for below-grade demolition. SVE and bioventing operations will continue until data from soil gas monitoring through existing vent wells indicate that biodegradation is no longer occurring at a significant rate and that soil testing confirms that the site-specific remediation goals have been met.

7.5 Soil Management During Below-Grade Demolition

The demolition contractor will be responsible for handling and disposal of impacted soil removed during demolition. There is a potential for impacted soil to be encountered during removal of pavements, floor slabs, footings, foundations, utilities, and other below-grade structures (e.g. sumps, drains, etc.). As these features are removed during demolition, the demolition contractor will follow the procedures described in this section. The procedures associated with the below grade-demolition described in this section are included in the project technical specifications provided in Appendix B.

During removal of the slab and other below-grade structures, the demolition contractor will monitor for hazardous vapors and observe the condition of the underlying surface of the concrete slab and the condition of the soil underlying the slab. If areas of impacted soil that were not included in the areas shown on Figure 5 and addressed in Section 7.2 are observed (based on visual staining and/or noticeable odors), the demolition contractor will take the following general steps.

1. Notification - notify the Site manager and begin air monitoring with a PID.

2. Monitoring - conduct initial air monitoring for health and safety and SCAQMD permitting compliance with the PID. If PID readings are above Rule 1166 permit criteria, continue using Rule 1166 requirements and the requirements of Section 02114 of the Technical Specifications (Appendix B). If the PID readings are above health and safety air monitoring thresholds, workers will upgrade to the appropriate PPE specified in the demolition contractor's Health and Safety Plan (HASP).

3. Segregation - segregate impacted soil from the slab or structure(s) already being removed. As visually impacted structures are removed, the suspect soil directly adjacent to and beneath the structures will also be excavated, segregated, and/or

stockpiled on plastic (with a minimum thickness of 6 mil) and covered with plastic or placed in covered roll-off bins or in end dumps, as needed based on volume.

4. Soil removal - conduct exploratory soil removal to assess the extent of impacted soil based on visual indicators and continue air monitoring:

   - if the area of impacted soil appears to be a “small area” (up to 100 cubic yards of soil), continue to remove soil and stockpile as needed, then continue with demolition work.

   - if the area of impacted soil appears to be greater than 100 cubic yards (“large area”), work in this area will be coordinated and phased with other excavations of known COC-impacted soils. The area will then be visually demarcated by the contractor.

   - COC-impacted areas will then be excavated to the extent necessary to meet site-specific remediation goals discussed in Section 5.3.

5. Confirmation sampling - confirmation soil sampling will be conducted using the procedures described in the QAPP (Geomatrix, 2007). The analytical suite for soil samples tested may include VOCs, PCBs, or metals. If additional samples are collected, the soil analytical results will be compared to the site-specific remediation goals discussed in Section 5.3 to assess the need for additional removal or backfilling of the excavation. If soil testing is deemed not necessary based on existing data, the excavation will be backfilled.

6. Excavation backfill - after confirmation sampling is complete, excavations will be backfilled and compacted by the demolition contractor as described in the Below Grade Demolition Plan (Geomatrix, 2006b). Concrete debris with concentrations of COCs less than the remediation goals will be crushed to the gradations provided in Section 02050 of the Technical Specifications, and backfilled and compacted pursuant to Section 02351 of the Technical Specifications (Appendix B).

During below-grade demolition, and as required by DTSC, shallow soil testing will be conducted below the buried rail lines during removal. Once the rail lines are removed, shallow soil samples will be collected and tested for metals. In addition, the underlying soil will be observed for petroleum hydrocarbon impacts. If soil samples collected beneath the rail lines are impacted with metals and/or petroleum hydrocarbons at concentrations above the site-specific remediation goals, the steps described above for soil removal, confirmation sampling, and excavation backfill will be conducted.

During these activities, health and safety procedures will be implemented by the demolition contractor as described in their site-specific HASP. In addition, dust suppression and vapor and/or odor control will be implemented by the demolition contractor as needed using the requirements of Section 01501 of the Technical Specifications (Appendix B).

Stockpiled soil will be sampled for laboratory analysis. Soil and waste disposal profiling will be completed by the contractor and soil will be transported using appropriate shipping manifests or bills-of-lading. The demolition contractor will notify the Site manager prior to shipping any impacted soil and waste off-site. Storm water management associated with the stockpiled materials will be the responsibility of the demolition contractor pursuant to Section 01502 of the Technical Specifications (Appendix B) and the contractor's SWPPP.

8.0 PUBLIC PARTICIPATION

As required by the NCP 40 CFR 300.430(c)(1) and DTSC, Pechiney will ensure that the public is informed and has the opportunity to participate in the overall remedial action for the Site. A comprehensive community involvement plan will be submitted following the submittal of this RAP. Public participation will be implemented as part of demolition and remediation activities. The community involvement program and activities are described below.

8.1 COMMUNITY INVOLVEMENT PROGRAM

The objective of the community involvement program is to inform the community of the progress of demolition and remediation activities and to effectively respond to health, environment and safety concerns and questions. The community involvement program will be consistent with DTSC requirement and CERCLA as implemented by the NCP 40 CFR 300.430(c)(1). The purpose of these activities as stated by the NCP 40 CFR 300.430(c)(2)(ii)(A) is to "ensure the public appropriate opportunities for involvement in a wide variety of Site related decisions, including Site analysis and characterization, alternatives analysis, and selection of remedy; and to determine, based on community interviews, appropriate activities to ensure such public involvement."

Objectives of the community involvement program include:

- soliciting input from the community on concerns about the remedial activities;
- establishing effective channels of communication between the community, Pechiney, and the DTSC;
- informing the community about progress of the remedial activities; and
- providing adequate opportunities for the community to participate and comment on the proposed remedial activities.

8.2 COMMUNITY INVOLVEMENT ACTIVITIES

To date, Pechiney has conducted community outreach activities to its immediate neighbors including face-to-face visits from the project and field engineers. As part of the below-grade demolition phase of the project, Pechiney will distribute information to the immediate neighbors of the Site including proposed activities and schedule of work.

Prior to the start of the remedial activities, Pechiney will expand its outreach and distribute an information fact sheet to businesses and residents surrounding the Site and to other interested stakeholders. This fact sheet will include information about the Site, remedial activities, and project contacts. Additionally, a local information repository will be established to make documents and other information available for the public and a Site mailing list will be developed.

This RAP will be made available to the public for a comment period of at least 30 days. Pechiney will work with the DTSC to respond to any comments and to provide a timely opportunity for the public to access documents.

Depending on the level of community response and level of interest, Pechiney will hold a community meeting to discuss the components of the RAP, the Site's history, and proposed remedial work. The meeting may also provide the opportunity for the public to submit comments on the RAP. Pechiney will work with the community to develop a meeting format that best suits the needs of the community.

These and other recommended activities will be presented to the DTSC in a Community Involvement Plan that will be submitted after the RAP. The implementation schedule of these activities will be established in coordination with the DTSC.

Depending on the level of community interest about the Site, DTSC and Pechiney will evaluate the necessity of additional activities are necessary. The level of interest from the community will be evaluated using the volume of public comments and the nature of community concerns and questions expressed. The DTSC will oversee all community involvement activities throughout the proposed RAP implementation and ensure they are conducted in compliance with state and federal regulations.

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